The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XIII. No. 318 JULY 18, 1925

Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

PAGE

EDITORIAL: The Teaching of Applied Chemistry; The Factory Inspector's Report; Technical Libraries; Self-Contained Chemical Production; Patents as Chemical Literature; A Fair View of Trade Figures 51
Annual Meeting of the Society of Chemical Industry 54
Boric Acid Manufacture in Tuscany 62
Chemical Trade Returns for June 63
Annual Meeting of the Association of British Chemical Manufacturers 64
British Association of Chemists 65
Chemical Matters in Parliament 67
From Week to Week 68
References to Current Literature 69
Patents Literature 70
Market Reports 73
Company News; Chemical Trade Inquiries; New Chemical Trade Marks; Tariff Changes 78
Commercial Intelligence; New Companies Registered 80

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices—8, *Bouverie St., London, E.C.4.*
Telegrams: "Allangas, Fleet, London." Telephone: City 9852 (6 lines)

The Teaching of Applied Chemistry

THE question of the inclusion of applied chemistry in the curriculum of an honours degree in chemistry is one which has exercised the minds of professors and others for a considerable time. It attracts more and more attention, and attains greater prominence as time goes on. The importance of the subject is illustrated by the fact that the Council of the Institute of Chemistry have just modified one of the rules of the Institute whereby those specialising in applied chemistry can gain admission to the associateship without examination. The teaching of applied chemistry, either as a part of the honours course or for a distinct degree in technology, has become firmly established in several of our Universities and colleges; but there are many who hold the opinion that it is not the function of a University to give instruction in technical chemistry. There is, of course, something to be said for both views. The subject appears to be a part of the even more vexed question of specialisation. We do not propose to express any opinion upon whether applied chemistry should form a definite part of an honours degree course or not.

In these days, when there is so much pure or fundamental chemistry to be learnt, the attempt to squeeze in a knowledge of works' practice is of doubtful value. At the same time, we think that more might be done to make the student acquainted with those materials and processes of importance in the chemical industry by laying greater emphasis on those parts of his work which, while of theoretical interest, also have a technical application. For instance, when giving instruction on reactions of fundamental importance, why not illustrate them, wherever possible, by means of examples of technical value? Many of those undertaking a degree course in chemistry are fitting themselves to earn a livelihood in the chemical industries. There is not much point, therefore, in teaching them, for example, how to prepare a compound of no particular use to anyone when a product of commercial utility might be chosen which would fulfil the purpose equally well. There is sufficient pure chemistry involved in the many branches of chemical manufacture to make it possible to draw largely, if not exclusively, upon these for the examples and illustrations which form the means of inculcating the theoretical side of the subject. In this way the student would be familiarised to a greater extent with those processes and products with which he is likely to meet when he enters upon an industrial career.

The Factory Inspector's Report

ONE of the most significant passages in the annual report of the Chief Inspector of Factories, which has just recently been issued, is that referring to the tragic aspect of the present state of unemployment which is depriving the young manhood of the country of opportunities for learning a trade. There can be little question that, with conditions in industry such as they are, employers are not in a position to offer facilities to apprentices on the scale which has been customary in the past, and there is a real danger that when a substantial revival of trade does eventually arrive, we may be confronted with a serious shortage of skilled labour. Moreover, the fact cannot be neglected that, by omitting to train the younger generation at the present time, we may be running the risk of finding, say, ten years hence, a much greater preponderance of unskilled over skilled labour than has been usual in this country. This is a consideration which must be studied in conjunction with the prevailing tendency in every manufacturing process to substitute machinery for all forms of labour engaged in unskilled operations, so that while there must follow an inevitable decline in the demand for the man without a trade, there is likely to be an increasing call for the trained individual capable of supervising and repairing mechanically operated plant, or of conducting technical processes which demand a fair degree of skill and the use of mind rather than muscle. The Chief Inspector does not hesitate to draw attention to the number of

instances where labour-saving machinery was introduced during the year under review, and perhaps it is not difficult to draw inferences from the statement that while the number of registered factories in Great Britain continues to increase, the number of workshops continues to decline. It should be explained that the decline in workshops is largely due to the introduction of power, the use of which converts a premises from a workshop into a factory.

Turning to the portion of the report which relates to the chemical industry, it is to be noted that a new plant, the only one of its kind in this country, has been erected for the manufacture of sulphuric acid by the Schmiedal process, which is capable of turning out 1,000 tons of concentrated acid a month, and in the same area a plant has been completed for the manufacture of synthetic ammonia. What is said to be the largest alcohol factory in Europe has been started up in the Hull district. As a result in part of the experience gained in the war, in the production, storage, and transport of liquid chlorine in large quantities, its use is rapidly increasing, either in new processes or manufactures, or as a convenient substitute for other chemicals, such as bleaching powder. Its use in paper mills is specially mentioned in Scotland. In Grangemouth, the large new oil refinery is now working to full capacity, refining crude petroleum imported from Persia, and the ten 8,000 ton tanks are barely sufficient for their storage requirements. These are examples of but a few of the developments which are taking place in the chemical industry of the country, and it is encouraging to find that at least in this particular branch of trade there is not only evidence of quite reasonable activity, but the future shows every sign of promising well.

Technical Libraries

A PAPER which appears in the current issue of the *Journal* of the Institute of Chemistry, has aroused considerable interest in the organisation of technical libraries. Every chemical manufacturing firm finds it necessary to equip some sort of library, specialised, of course, to suit its own particular needs. The chemist, more perhaps than most other workers, not only requires to keep in touch with present progress in his own section of this wide field, but is very dependent upon the records of the earlier achievements of others. Unless he can consult reference books and chemical journals, he must, therefore, waste valuable time in acquiring by experiment knowledge which has already been obtained and published by other chemists.

The really useful library is not, however, a mere collection of the necessary books and journals. It must include a librarian, capable of rendering easily accessibly the knowledge stored away in printed pages. In the article mentioned above Dr. Rintoul describes how this is achieved in Nobel's factory at Ardeer. The business man has long appreciated the great simplification brought about by the card index system, and at the Ardeer library every item of knowledge useful to the factory is to be found abstracted on 5 in. by 3 in. cards, with the necessary reference to the original source of the information. It is scarcely to be expected that smaller firms could afford to systematise their libraries on such a vast scale—we are told that the indexes at Ardeer comprise close on a quarter of a million cards!—but there is a useful moral here even for small firms. It is worth while to take very considerable trouble over the library. In proper hands, a library is as valuable at least as an additional chemist, and a couple of hundred pounds a year will go a long way towards keeping it in first-class order. The librarian need not devote all his time to the library if it is only a small one, but he must possess that indefinable *flair* which enables him to pick out the grain or two of useful information from a mass of chaff, and he must have an unusual memory. The modern librarian is no longer the dull, musty old man of last century with a mind parchment-stiff and as hide-bound as the ponderous tomes in his charge. He is a specialist product of our own times—specialised in the art of hunting information. The importance of such specialisation is recognised in America, and several universities there have now instituted courses of lectures expressly for the teaching of this art.

Self-Contained Chemical Production

WE are at present witnessing an interesting transition phase of our chemical industries. We find to a lesser degree the segregation of clearly defined, separate, and independent branches of chemical manufacture. There has been a marked tendency in recent years for producers, especially the larger concerns, to branch out from their normal or staple lines and to take up the production of types of materials either entirely new or new as far as they themselves are concerned. Dyestuffs factories are now turning out patent medicines, tanning materials, synthetic resins and rubber accelerators. Explosives manufacturers make sheep dip; soap firms dabble in perfumery; photographic concerns produce fine chemicals, and so on. There are a number of factors operating to bring about this development in the evolution of the industry. In the first place, we may note the growing tendency of the producers of primary or raw materials to carry the production to the final product a stage further themselves instead of handing on the raw material to someone else to work up. In some cases they have completed all the intermediate stages. In this way production has become more centralised. We may instance the preparation of a number of dyestuffs intermediates and other pure chemicals by the larger gas and coke-oven companies who produce the raw tar.

In contrast to this there is the increasing adoption of a policy whereby the manufacturers of intermediate and final products tend to make themselves independent and self-contained by producing their own raw materials. This policy has been fostered by the need for technical economy in these days of high market prices and cost of transport. Then, again, there is the desire to utilise waste products or by-products from the normal lucrative operations, a desire rapidly becoming a necessity, and one which is being backed up by intensive research directed to producing new materials for which a market can be found. For instance, since Stiasny found in 1911 that the cresols could be made to yield successful tannins, there has been a constant stream of claims put forward for other products for which the commercial outlets have been

very limited, such as phenanthrene and carbazol. Another factor is the absorption of small concerns by the larger ones and other types of close business association. Such arrangements hardly come into consideration, however, since, although economic in nature, they are not evolutionary in the chemical sense. There are, of course, limitations to these changes. The opportunities for creating new products and new applications are not inexhaustible, and many companies are bound by the terms of their charters. Nevertheless, the trend of these developments promises to be of particular interest and will have results which, we have no doubt, will be for the general good.

Patents as Chemical Literature

THE increasing number of chemical patents, particularly those relating to "inventions" in organic chemistry, raises the question of the extent to which the information contained in them can be taken to represent new work of interest and importance from the purely chemical point of view. We are not referring here to their value from a commercial standpoint; this is best known to the patentees. But it is becoming more and more apparent that an increasing proportion of chemical patents contains a record of work of high standard, comparing very favourably with some of the academic papers in the purely scientific journals. In many cases the work is of general interest—a new reaction, a new application of a known process, or a new class of compound. A glance at the older text books of organic chemistry will reveal the fact that the patent literature was largely ignored, whereas in the volumes of more recent publication references to patents form a more and more prominent feature. In Germany, where the liaison between the Universities and the chemical industries is much closer than it is in this country, it has been a common practice for a student to carry out an investigation the details of which are embodied in a patent, subsequent to which the full paper appears in, say, the *Berichte*. Although we do not advocate this system, we think something more might be done to record the work in the proper journals where the standard of the work warrants it. At one time patents were regarded with a good deal of suspicion—not, let it be said, without some justification—but to-day, although some of the prejudice still remains, the patent literature compels recognition from even the most academically minded of "pure" chemists.

A Fair View of Trade Figures

AT the end of last week the scaremongers had things all their own way for a day or two in connection with the Board of Trade Returns for June. The public was pushed into a state of excitement over an increase, as compared with the figures for the previous month, of nearly seven millions in the imports and a decrease of over five millions in British exports, which figures were argued into an adverse trade balance of twelve millions, whatever that may mean.

It is well to remember that there are several categories of politicians definitely interested in bad trade and commercial depression, and anxious to make things ook as gloomy as possible. Those who object to the gold standard do not want things to improve so soon after its re-introduction. Then there are the politicians who have ranged themselves on one side or the other of the tariff fence, and the wider class who hope that the bogey of depression will discourage strikes and industrial unrest; while, of course, a larger number still are interested to show that with such a Government things must be bad.

But the business man has to look more carefully at figures, and the first thing that strikes him is that the sensible comparison of the June figures is with the corresponding month of the previous year. He will not, however, stop there, because he realises the wisdom of examining the figures for a sufficient period to enable a sound judgment to be taken, and will prefer to rely, therefore, upon the comparisons between the first six months of 1925 and the corresponding period of 1924, which give us a diminution in exports of 1 per cent. only and an increase in imports of 13 per cent. Too little attention has also been given to the fact that the rush of imports to avoid the duties which came into force on July 1 is sufficient to account for the bulk of the increase about which so much has been talked. The next two or three months' figures ought to show a very different result.

Points from Our News Pages

Our special correspondent contributes interesting impressions and notes upon the annual meeting of the Society of Chemical Industry at Leeds (p.54).

A notable feature of Mr. W. J. U. Woolcock's presidential address on "Dyestuffs" was the international view-point from which he considered the whole industry and its future. His comments upon the post-war positions of competing nations were particularly valuable (p. 56).

The membership of the Society has increased and active propaganda is being pursued to maintain this improvement (p. 59).

New members of the Council of the Society elected by ballot were Mr. John Allen, Mr. Julian L. Baker, Professor C. Gibson, and Dr. H. Houlston Morgan (p. 60).

Prince Ginori Conti's paper on boric acid production in Tuscany described processes of production from unique natural supplies (p. 62).

Trade returns for June show exports and imports up on last year's figures. Figures for glycerin, benzol, and toluol, and sodium sulphate provide noteworthy changes (p. 63.)

The present-day problems of the dyestuffs industry and the lesson of co-ordination to be taken from Germany were outstanding points dealt with at annual meeting of the Association of British Chemical Manufacturers (p. 64).

There has been a fair volume of trade in the London market, but stocks have probably never been so low as at present. The threatening coal crisis is affecting the market for coal tar products (p. 73).

In the Scottish market caustic potash has been reduced by about 15s. per ton, otherwise prices are fairly steady (p. 76).

The Calendar

1925 July 13 to 18	Society of Chemical Industry: Annual Meeting.	Leeds.
17	Institution of Chemical Engineers: Annual Meeting. 9.30 a.m.	Philosophical Hall, Leeds
Aug. 26 to Sept 2	British Association for the Advancement of Science.	Southampton.
Oct. 23	Engineers' Club: Annual Dinner.	Savoy Hotel, London

Society of Chemical Industry : Annual Meeting

Well Attended Conferences at Leeds

The annual meeting of the Society of Chemical Industry opened in Leeds on Monday evening and concludes to-day. We give below some impressions and notes on the conference, together with a report of the Presidential address, and of the discussion on the annual report and balance sheet. Prince Ginori Conti's paper on "The Manufacture of Tuscany Boric Acid" is also reported.

(From Our Special Correspondent.)

Leeds, *Wednesday.*

The Society is fortunate in holding its annual meeting at Leeds this year, as the city is the centre of one of the most important industrial areas in the country. While most of the local chemical firms were established before the Society of Chemical Industry was founded, it is interesting to note that the University of Leeds did not exist when the Society last met in this city some thirty years ago. The headquarters of the Society during this year's meeting are at the Philosophical Hall, which building has played an important part in the intellectual life of Leeds for over a century. After one or two early attempts by Priestly and Hey, the present Philosophical Society was founded in 1819, and three years later a hall was erected in Park Row, which was altered to its present form in 1862.

There was a good attendance at the annual general meeting, when Mr. Woolcock delivered his presidential address. Afterwards, about 300 members and friends, together with the American guests of the Society, were entertained at luncheon in the crypt of the Town Hall. The chairman, Mr. John Evans, and members of the Yorkshire section were the hosts on this occasion.

In extending a civic welcome to the Society, the Deputy Lord Mayor of Leeds, Councillor Lambert, said that while Leeds had the reputation of being a dirty city, the fact that the Society had chosen it as the seat of the conference this year was evidence that the city compared very favourably with many of its rivals. The Vice-Chancellor, Dr. J. B. Baillie, expressed the University's welcome, and said that compared with the Society of Chemical Industry, the University was a new invention like wireless and the aeroplane, but they welcomed the older institution no less heartily. Science meant business and team work, and was creating a new form of human fellowship.

Then followed the presentation of the Society's medal to Mr. Walter Reid. The President said that it was 14 years since the Society had visited Yorkshire, and Mr. Reid was president on that occasion. The science of explosives, notably of guncotton and smokeless powder, owed much to Mr. Reid's work, while linoleum and cement were also associated with his name. For these reasons and for his devoted service to the Society, the medal for 1925 was presented to him. In reply, Mr. Reid said he was one of the original members of the Society and his father was one of the first manufacturers of cement. The discovery of Portland cement was made at Leeds and this material was now being used on many new London roads. Without wishing to disparage the Deputy Lord Mayor's views on the cleanliness of the city, Mr. Reid said that in Leeds the buildings acquired the dignified appearance of age while still retaining their strength, and, after some study of the smoke question, he suggested that the Houses of Parliament would have been better preserved had they had the advantage of being "varnished" with a coating of Yorkshire coal!

The Treasurer's report was presented by Mr. E. V. Evans, who, in moving its adoption, pointed out that while the balance sheet for the year ending December, 1923, showed a deficit of £5,000 on the *Journal*, the corresponding figure for the year 1924 was £755 only, so that very large economies had been effected. The revenue, however, had dropped by £1,250, so that there was a net saving of some £4,000, but this was not enough to prevent a deficit. When the accounts were open to discussion and a member asked for an explanation of one of the items, the treasurer's answer was somewhat vague. Under expenditure on *Chemistry and Industry*, the "publishing" item for 1924 stood at just over £400, although in 1923 this figure was something over £4,000. It appears that "the main cause of the difference in this item" is that previously copies were sold to members of the Chemical Society and similar bodies, but it is not easy to understand how this can account for an amount of well over £3,000. The treasurer said that their policy was not to increase expenditure on the *Journal* at the expense of the Society's funds.

The ballot for the ordinary members of the Council of the Society was announced by the President at the end of the general meeting, those elected to fill the vacancies created by the retirement of four members being:—Mr. John Allan, past-chairman of the Manchester Section and chief chemist to Crosfield and Sons, Warrington; Mr Julian Baker, past vice-president; Professor Charles Gibson, Professor of Chemistry at Guy's Hospital, London; and Dr. H. Houlston Morgan, president of the Oil and Colour Chemists' Association. Mr. W. J. U. Woolcock, C.B.E., the retiring president, was reappointed to that office, while Dr. W. R. Hodgkinson, Dr. Alfred Macintyre, Sir William Pope, and Mr. Edwin Thompson were nominated as vice-presidents of the Society. Dr. H. Levinstein succeeds Sir William Pope as honorary foreign secretary, while Mr. E. V. Evans remains hon. treasurer. The most satisfactory item in the Annual Report of the Council was that the present membership of the Society showed an increase of 34 over last year's figure, there being now 4,864 members.

In delivering his presidential address, Mr. Woolcock pointed out that he was not going to read the paper which he had formally prepared, but intended to outline the principal facts in the history of the development of dyestuffs. In doing so he called special attention to the fact that this year marked the centenary of Faraday's discovering of benzene, of which the production of dyestuffs was a direct result, and on the wall behind the presidential chair was the banner used during the recent celebrations at the Royal Institution in London, for the conception of which Professor H. E. Armstrong was so largely responsible. For the particular interest of the many American visitors, Mr. Woolcock referred to the remarkable development of dyestuffs in the United States, which now produced 95 per cent. of its own requirements. This was a fact of which, as an English-speaking race, we could be justly proud. Mr. Woolcock had started by apologising for the fact that his formal address was "dry," but those members

who were interested in the subject of dyestuffs probably regretted that he did not give his paper in full, as his engaging and experienced platform manner was bound to hold the attention of his audience.

On Wednesday afternoon a number of members visited various industrial and chemical works in the neighbourhood of Leeds, and perhaps the most interesting of these visits, from the chemists' point of view, was that to the works of Hickson and Partners, Ltd., chemical manufacturers, of Castleford. These works were erected in 1915 at the instigation of the Director of Contracts of H.M. War Office for the purpose of manufacturing trinitrotoluene, and are situated on the banks of the river Aire. The buildings were so designed that they could be converted eventually into a self-contained colour factory capable of making its own intermediates and dyes. Sulphuric acid is, of course, one of the staple raw materials used in the works, and the plant includes a sulphuric acid chamber, believed to be the largest unit of its kind in the United Kingdom. Members of the Society were received by Mr. Ernest Hickson, who has been associated with the aniline colour trade since the earliest days, notably with the first large makers of the dyes, Brooke Simpson and Spiller, of London, since 1877. His son, Mr. Bernard Hickson, M.Sc., who also received the visitors, has had unique opportunities of studying foreign colour works and was a member of the mission to Germany arranged by the Board of Trade in 1919.

The Glass Bottle Works of J. Lumb and Co., Ltd., at Castleford, provided another instructive trip, and to those who had small knowledge of glass-making, the visit offered an exceptional opportunity of learning something of the processes. These works contain probably the largest automatic bottle-making plant in the country, and it was quite amazing to see 24 bottles per minute being delivered down a chute—for the subsequent use of a well-known firm.

The machine is a large revolving one which completes 2½ turns per minute and works day and night. It was last stopped for cleaning and repairs after a continuous run of fourteen months, delivering its 1,440 bottles per hour for the whole of that period! Members visiting these works had reached Castleford by charabanc. A most welcome tea at the local café concluded an interesting afternoon before returning to Leeds for the next "meeting"—a dance in the Great Hall of the University at which the men were certainly in the minority!

Special interest is added to this year's meeting by the gathering which the Institution of Chemical Engineers has arranged jointly with the American Institute of Chemical Engineers. The third annual meeting takes place on Friday, and previous to this the members are attending the Society's functions as its guests. The early history of the movement of which the Institute was the outcome is somewhat varied. At the annual meeting of the Chemical Engineering Group in Newcastle in 1919, it was proposed that an Institution of Chemical Engineers should be formed, but this was not acceptable to the majority of those present. In August, 1921, the visit of some members of Committee of the Chemical Engineering Group to the American Institute of Chemical Engineers resulted in the proposal made at the next annual meeting at Baltimore of the American Institute that that body should become the parent Institution of Chemical Engineers in the English-speaking world. This proposal also came to nothing, but in November, 1921, under the chairmanship of Sir Arthur Duckham, a number of chemists and engineers met together and took the first steps to found the present Institution of Chemical Engineers for the British Empire. Ultimately, after thirteen months of work, a constitution was framed, and the Institution was formally incorporated on December 21, 1922. On January 10, 1923, at the first meeting of the Council, Sir Arthur Duckham, K.C.B., was elected first President, Mr. K. B. Quinan, and Dr. Chas. Carpenter became Vice-Presidents, and Mr. F. H. Rogers and Prof. J.W. Hinchley, Honorary Treasurer and Honorary Secretary respectively. Since that time the number of members of the Institution has increased until its present strength is 157 Members, 106 Associate-Members, 26 Graduates and 6 Students. From its inception the Institution has received the greatest support and encouragement from its sister Institute in America, and the arrangement by which the proceedings of the American Institute and of the English Institution are exchanged between the two bodies, is very much appreciated by members of both institutions.

Last year at the time of the annual general meeting THE CHEMICAL AGE, in referring to the new president, Mr. W. J. U. Woolcock, ventured to prophesy that at the end of his year of office there would be found some unmistakable record of his leadership. There have been many incidents in this year's conference which confirm that prophecy. That the Society has increased its membership during the last twelve months may seem of small account to the outsider, but at a time when all bodies of the kind are suffering indirectly from the effects of unemployment and industrial depression, it is a noteworthy achievement. Mr. Woolcock has given of his time and his inherent ability for organisation without stint. Besides breaking new ground he has reinvigorated the local sections and generally infused into others his own untiring energy, which is in no small measure responsible for his long record of success.

Mr. Woolcock, in his presidential address, immediately established contact with his audience and riveted their attention to his facts. It is his gift of understanding others, coupled with his never-failing enthusiasm and optimism, which made his visits and lectures to the various Sections so memorable a feature of his first year in office.

That he should have been re-elected for a second year is a fitting appreciation of his efforts in the Society's cause; and that his unusual pertinacity will win through to still greater progress is a fact which goes without saying.

Prince Ginori Conti's paper, which was presented on Tuesday, was, apart from its interesting description of a unique process, chiefly remarkable as showing how unusual natural conditions can be turned to profitable account by the chemical manufacturer. The Prince is, of course, well known now to his technical confrères in this country, for not only is this by no means his first visit, but technical chemists who have visited Italy have always been assured of a warm greeting and helpful co-operation at his hands. The problem which he set himself to overcome in connection with the effective harnessing of the remarkable natural emissions of volcanic steam has successfully yielded to his patience, and though the difficulties encountered were considerable, it would seem that at the present time Italy is regaining her original position as a producer of boric acid, and that the revival of this particular industry depends to no little extent on the ingenious provision made for extracting power as well as chemical compounds from this unusual prank of nature. The reception which was accorded the Prince should have assured him of the high appreciation which his work has aroused amongst technical workers in this country, and we shall be surprised if quite a number of English chemists do not take an early opportunity of visiting him in his own rather remote locality.

The Presidential Address on "Dyestuffs"

World Survey of Conditions and Progress by Mr. W. J. U. Woolcock

At Leeds, on Tuesday, Mr. W. J. U. Woolcock, who has been re-elected President of the Society of Chemical Industry, delivered an address on "Dyestuffs." In it he summarised early developments in the production of synthetic dyestuffs following the discovery of benzene, and stressed the international aspect, touching upon the present position of the dyestuffs industry in America, France, Switzerland, Germany, and other countries.

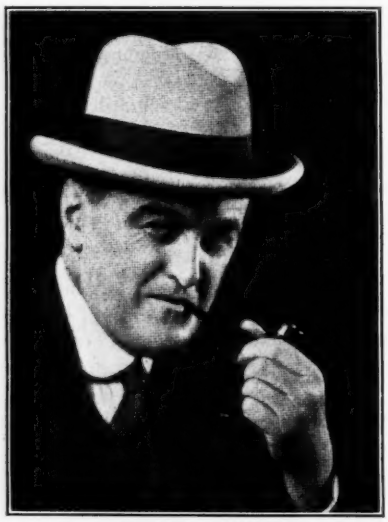
"In June of this year we celebrated the centenary of the discovery of benzene by Faraday, and it seemed to me fitting that I should say something in this Address of the extraordinary developments in the manufacture of synthetic organic dyestuffs, which are a direct result of that important discovery.

Early Developments in Dyestuffs

"The discovery of benzene was not immediately followed by the production of synthetic dyestuffs, and it was some thirty years later (1856) when Perkin prepared the first artificial dyestuff (Mauveine). From that date to the present time the preparation of new colours has gone on, accompanied by an international rivalry in the scientific and business world, which has made the dyestuffs section of chemical industry the most interesting of them all. It is this international aspect of dyestuffs manufacture to which I want particularly to direct your attention.

"Perkin commenced the manufacture of dyes as an industry in the year following his discovery of mauveine. Two years later in France the discovery of fuchsine by Verguin led to the establishment of the industry in the works of Renard Frères et Franc at Lyons. The connection of this firm with A. Clavel links up the early days of the French industry with those of the Swiss, which began in 1859.

"In 1859 also J. Gerber-Keller, of Mülhausen, produced the red dyestuff Azalein, which was similar, but superior in tint, to the fuchsine of Renard Frères. Difficulties in France led him to remove to Basle and begin there the manufacture of dyestuffs," said the President, in a survey of the early activities of the dyestuffs industries in the various centres. He also dealt with original difficulties, and outlined the story of alizarine as typical.



THE PRESIDENT:
MR. W. J. U. WOOLCOCK

Personalities in the Industry

"In the early days of the British Dyestuffs industry, Green, Meldola, Mensching, Claus, and Vlies were great personalities on the scientific or technical side. On the business side Ivan Levinstein was at the head of Levinstein's, and was devoting considerable attention to public affairs. In particular, he will be remembered for his work in connection with the reform of our Patent Laws, an agitation which he conducted for some twenty years.

"At Read Holliday and Sons was Thomas Holliday, the father of Major Leo Holliday. With him were Mr. (now Sir Joseph) Turner, and Mr. Harry Dean as chief chemist.

"The Clayton Aniline Co. were originally engaged principally in the manufacture of aniline. They decided to take up the manufacture of dyes, and secured the services of A. G. Green from Brooke, Simpson and Spiller, who introduced a whole series of new dyes, including Clayton Yellow, Oxyphenine Chlorophenine, Rosophenine, Dianthine Red, and made a feature of Primuline and Para nitraniline. Roberts, Dale and Co. had abandoned the manufacture of the most valuable aniline dyes discovered and first introduced to them by some of the distinguished German chemists previously mentioned, and were chiefly engaged on dyewood extracts and picric acid, but a terrific explosion finally destroyed their works. Claus and Rée started in 1891, and in common with all the firms had a rather uphill time. After the first few years, however, they were quite successful in a small way. I must not say anything of Dr. Rée's part in this, because he is fortunately still with us. I can, however, say something of the record of Claus, who combined gifts which have been found rarely in combination in one individual. He was a good chemist who had a natural aptitude for mechanics and engineering, and in addition he was a shrewd business man.

"As the years went on it became increasingly evident that there was no real future for the development of dyestuffs manufacture in England so long as the patent position remained as it was. We were merely assisting the foreign dye manufacturer to establish firmly his trade with this country. Mr. Lloyd George was the first man of any influence in any Government up to 1907 to see that the patent law agitation was not bound up in any way with a desire to abandon Free Trade. The Act of 1907 was passed while Mr. Lloyd George was President of the Board of Trade. Its usefulness, however, was nullified within two years by the judgment of Mr. (afterwards Lord) Justice Parker.

France and Switzerland

"The position in France was unfavourable, handicapped in patent legislation as were her manufacturers, but in Switzerland it was different. The Swiss manufacturers were not troubled with patent laws, but they were handicapped by having to obtain their intermediates from outside their own country. They alone, however, were able to continue the competitive struggle with Germany.

"The world dyestuffs situation at the close of the year 1913 revealed Germany at the zenith of her prosperity. She was then making about 125,000 tons and exporting more than 100,000 tons of dyestuffs of all kinds. Of this amount about 28 per cent. (mainly indigo) went to China, 19 per cent. to the United States, 14 per cent. to Great Britain, and 6 per cent. to British India. (See reports of Statistisches Reichsamt.) About 80 per cent. of the world's production was concentrated in Germany.

"The Swiss industry produced about 7 per cent., and had to import foreign intermediates. The production of the works was of the value of £1,500,000, of which one-tenth was used in Switzerland and the remainder exported. This figure includes indigo, the production of which had been started at Monthey (Valais) in 1911. A comparison with the German industry is interesting. Between 1898 and 1913 the value of the German exports had doubled: so had those of the Swiss. The value of the Swiss exports was 14 per cent. of that of the German, although the population of Switzerland was only 6 per cent. of that of Germany. The position in France was that only from 10 to 15 per cent. of the amount consumed in that country was made in factories owned and operated by the French.

"The position was similar in America: the imports amounted to about 46 million pounds, and the output of the seven dyestuffs firms was rather over 6½ million pounds.

"England was in a like condition. The British production in 1913 amounted to about 9 million pounds, while the foreign imports were about 41 million pounds. Roughly, 90 per cent. of these imports came from Germany and 10 per cent. from Switzerland. Just as in France and America, so in England, the position was not even as good as indicated by these figures, for of the 20 per cent. of the total dyestuffs used in England which were made here a considerable proportion (probably nearly one-half) was made from imported intermediates.

"The Japanese Government decided to subsidise the dyestuffs industry, and in addition organised and controlled the Japan Dye Manufacturing Company in Osaka. Production

expanded during the years of war until Japan reached her best year in 1919, when she produced 12½ million kin (85 per cent. of which were sulphide colours) and imported 2 million kin. The position in Italy during the war was analogous. In France the development during the war was rather slow, only reaching 6 to 7 million pounds in 1919.

"In America, as might be expected, matters progressed more quickly. Beginning with a home production of about 6½ million pounds in 1914, in 1917 it had risen to 46 million pounds and the subsequent year was 58½ million pounds.

"The British Government realised quite early that it would be necessary to give assistance if the industry were to be developed and the requirements of the colour users in this country were to be met. The first important development was in co-operation with the Swiss dyemakers. It was quite natural that we should turn to the Swiss, who were our second largest suppliers of dyestuffs, and invite increased supplies. The trouble lay in the fact that Switzerland was largely dependent on Germany for intermediates. The Germans were not prepared to supply these intermediates to the Swiss unless an undertaking was given that the dyestuffs made therefrom were not to be exported to the United Kingdom. At this point the Board of Trade intervened and arranged for a supply from this country of intermediates, and a return to this country of an equivalent quantity of the dyestuffs made from them.

"The period of the war was one of great prosperity for the Swiss dyestuffs industry, once the difficulty of the supply of raw materials and intermediates had been overcome with the assistance of France, America, and England. The three principal makers—Geigy, Sandoz, and the Society of Chemical Industry of Basle—united their interests and great progress was made. The exports of dyes from Switzerland in 1913 amounted to about 19½ million pounds, and although this quantity was not reached in 1918, the value was over three times that of the value of the exports in 1913.

"So far," said Mr. Woolcock," I have traced the establishment of the Dyestuffs Industry, the international rivalry which led to the supremacy of Germany before the war, and the efforts the Allies made to satisfy their requirements during the War. Now let us consider what has happened since the war.

Post-War Developments—America

"In discussing post-war developments I give first place to America. If I mention with great respect one name only, it is because all my other American friends would prefer that his name, and his alone, should be mentioned. I refer to Dr. Charles H. Herty, the President of the Synthetic Organic Chemical Manufacturers' Association of the United States. To him, I believe, more than to any other one man is due the happy position in which America finds herself to-day in the production of dyestuffs.

"America ranks second as a consumer of dyestuffs, with an average annual consumption of about 55 million pounds; China coming first with an estimated consumption of about 70 million pounds. I have already stated that in the last year of the war America had secured a production of 58½ million pounds. In the last year of the war America's production had caught up her pre-war imports, and providing her costs of production were sufficiently low she was getting into a position where it was possible to export. The figures of production and export of the next two years are very significant:—

	Production by weight.		Export by value.
1919	63,402,194 lb.	..	$15,728,499
1920	88,263,776 lb.	..	$29,823,591

The value of the exports is not strictly comparable, because, although it does not include logwood extract, it does include other dyes which are not aniline dyes, although the value must be small.

"Then came the bad year of 1921, when the value of the exports fell to six million dollars and the production to 39 million pounds. The succeeding year found what appears to be about the normal production for America, 64½ million pounds, which rose to 93½ million pounds in 1923, with an export of nearly 18 million pounds of a value of 5½ million dollars. It should be noted in passing that the occupation of the Ruhr and the seizure of German dyes by the French and Belgians took place during this year.

"The production for last year (1924) was 67 million pounds, and it is said there was 7 million pounds carried over from 1923. It is also said that imports increased following the 15 per cent. reduction in the tariff which came into effect on September 22, 1924. That the increase of imports is progressive seems clear from the figures for the first five months of this year (1925)—2,126,483 pounds, as against 1,062,940 pounds in the same period of 1924. To sum up the position in America to-day as it appears to an outsider: America is producing 95·5 per cent. (by weight) of her total requirements of dyestuffs. In addition to having the plant she has the necessary experience to enable her to maintain this percentage. Her firms are possibly rather over-capitalised, and although the average sales price for 1924 is $0·535 per pound, it would seem that if she hopes to do an increased export business this will have to be brought down still further. She has done a magnificent piece of work which can easily be continued, and may, if circumstances are favourable, increase her business in dyestuffs very considerably.

Germany

"The position in Germany is complicated and not easy to interpret with certainty. The outstanding feature of the international situation which must always be in the minds of the German Interessen Gemeinschaft is that the world has too many dyestuffs plants. The world's annual consumption of dyestuffs before the war was estimated at about 350,000,000 pounds. The world's plant capacity just after the war must have been about 75 per cent. in excess of this figure, for England, Switzerland, France, America, and Italy had all increased their plants, and other countries had established new works. None of these will lightly abandon them. Germany, therefore, has to face, and has indeed faced, the possibility of a diminished output for at least a number of years. Since the war she has helped herself considerably by concentrating her dyestuffs manufactures and developing other branches of chemical industry. She has also been helped, possibly unintentionally, by the Allies, as I shall show later.

"In considering Germany's post-war production it should be remembered that in 1913 she had reached the enormous figure of nearly 300 million pounds. For February-December, 1920, it was 103 millions; for 1921, 116 millions; and 1922, 192½ millions. This steady increase is very remarkable, and culminated in January, 1923, in a production of 20 million pounds for that month. In the middle of January, 1923, the Ruhr was occupied by the French, and production fell each month until the month of May, when it was about 7½ million pounds. Then in that month came the seizure by the French of about 6,500 tons of dyestuffs. In the meantime, however, arrangements had been made to increase the production of the plants which were not in the occupied territory. From the time of the seizure production steadily rose until in the month of December, 1923, it had reached over 15 million pounds. I estimate the total production for 1923 to have been in the neighbourhood of 145 million pounds, and for 1924 about 160 million pounds." Mr. Woolcock then dealt with the position of Reparation Dyestuffs, and said that the working, although giving benefit to the colour users, undoubtedly "retarded the dyestuffs industries of the Allies."

Great Britain

"The attitude of the British Government and its actions in relation to dyestuffs during the post-war period deserves an impartial survey. Under Section 43 of the Customs Consolidation Act, 1876, it was believed that the Government had power by Proclamation to prohibit the importation of dyestuffs into Great Britain except under licence. Dyestuffs and many other chemicals were in fact prevented from entering the country except under licence. This power, however, was challenged, and by the decision of Mr. Justice Sankey in 1919 was held to be inoperative. The Sankey judgment flung wide the gates to foreign importers, and dyestuffs, fine chemicals, optical glass, and other essential commodities, which hitherto had been classed as munitions of war, were free to enter British ports again. In this extremity the Government proposed a Bill—The Imports and Exports Regulation Bill of 1919—which never matured. In it those 'key industries,' as they were termed by the Balfour of Burleigh Committee, were again protected. The failure on the part of the Government to proceed with this Bill placed the manufacturers of dyestuffs and fine chemicals, as well as others engaged in 'key indus-

tries,' in a very difficult position." The workings of the Dyestuffs Act were outlined and commented upon, and then the speaker said that "The year 1922 may be regarded as the commencement of the systematic post-war development in this country. The major portion of the surplus imports had been absorbed, and the extreme depth of the trade depression had passed. In that year Great Britain produced about 21 million pounds of dyestuffs, and the effect of the Dyestuffs Act was beginning to be felt.

"I have already pointed out that the occupation of the Ruhr in 1923 resulted in a reduction of the output of the German dyeworks, correspondingly in Great Britain production rose to 33 million pounds, and exports, which had been less than 4 million pounds in 1922, rose to 14 million pounds in 1923. It is a significant fact that the increase in production was largest in vat colours. The policy of the British dyemakers was to concentrate on the perfecting of the colours which were in production, rather than to start the making of a wide range of new colours. In this they were successful, and there was a marked improvement in the quality of their dyestuffs. In addition to this about a score of entirely new colours or types of colours not hitherto made in Britain were put on the market.

The Price of Dyestuffs

"In 1923 the question of the price of British dyestuffs became acute, and the Licensing Committee had to decide whether a particular price placed the consumer of the dyestuff in 'an unduly disadvantageous competitive position.' It was decided that either the current foreign price or three times the pre-war price, whichever were the higher, should be taken as a standard. If the British price could not be brought to this standard then a licence to import the foreign colour would be issued. As a result of this the price of a number of British colours fell very considerably.

"Another disturbing factor in 1923 was the negotiations between the German Interessen Gemeinschaft and the British Dyestuffs Corporation. These negotiations came to nothing at that time, but raised a storm of controversy, which did not benefit the industry as a whole.

"The year of 1924 was one of steady progress. British dyemakers played a leading part in contributing to the difficult problem of dyestuffs for the dyeing of cellulose acetate (artificial) silk. Soledon Jade Green, discovered and put on the market by Scottish Dyes, Ltd., was the first soluble vat dyestuff of the anthracene series, and it is being followed by a range of similar products. During the year at least twenty-five dyes not previously made in Great Britain—distinct and essential types belonging to various categories—were put on the market. Those are additional to about fifty new manufactures of types already being made by one or more British firms.

"Competition during the year was very keen, not only among British manufacturers themselves, but from the Continent as well. Foreign prices which had been more than three times what they were pre-war, were, in some cases, brought down to the three-times level. Prices for other dyestuffs were brought below that level, no doubt with a desire to show British consumers what the foreign makers would do if only the import embargo were removed, and also in the hope that it would force the British maker to even less remunerative prices. No figures are yet available as to the British production in 1924, but I confidently anticipate that they will show an increase on those of 1923. The imports of dyestuffs into Great Britain and Northern Ireland during 1924 totalled just under 8 million pounds. The exports in the same year amounted to over 6½ million pounds.

Switzerland

"For Switzerland, the post-war struggle of her dyestuffs industry has been very severe. There are points in the Swiss dyemakers' policy which indicate stability. Their works are not over-capitalised; their efficiency and experience are adequate; their production of specialities is valuable; and their policy of developing branches in various countries is to be commended.

"In 1920 Switzerland was able to export 23¾ million pounds of dyestuffs; exports fell, however, in the bad year of 1921 to 10¾ million pounds; but recovered to 16 million pounds in 1922. In the year of the Ruhr occupation (1923) there was a further increase to over 18 million pounds. In 1924 the volume of the Swiss production has increased a little, although the total value of that production is about the same as in 1923, owing to the continued fall in prices. The Swiss Dyestuffs Industry will, however, remain, I think, and it is to the interest of colour users throughout the world that it should.

France

"The post-war development of the French industry is very gratifying. In 1920 the total production of dyestuffs reached 17 million pounds, falling in 1921 to 13 million pounds and recovering to 18 million pounds in 1922, and to 21½ million pounds in 1923. The figures for 1924 are likely to be equally favourable. Thus France has attained the position of making about 90 per cent. of her requirements. She has also decided to continue to receive such dyestuffs as she may require in the form of reparations in kind. It also seems likely that she will increase her tariff on dyestuffs.

Japan

"Japan has made a valiant attempt to provide herself with dyestuffs. The best year was 1919, during which 16 million pounds were produced. Since then the production has fallen considerably, although the Japanese Government still continues to support the industry by subsidies. The more expensive dyes are being imported, and Germany is steadily regaining this market. Rumours are coming from Japan, however, that the tariff will be increased from 35 to 40 per cent. *ad valorem* in the near future.

"The position in Italy is that she continues to produce about 8 million pounds of sulphide colours and has added to this production about 2 million pounds of other colours.

A Danger to be Recognised

"I know of no time in the history of the development of the Dyestuffs Industry when it was more necessary than it is to-day that we in Great Britain should survey the position as it is.

"There are certain fundamental factors of which we must take account. The first is the large excess of dyestuffs plants which are still in existence in the world: the next, the determination of the Allies to maintain their own industries. The former difficulty will right itself in time, but the countries which hasten the process will reap the benefit. The anticipation of the effects of economic laws is sound business. The determination to maintain national dyestuffs industries will be strengthened or will weaken in proportion with the cost of their maintenance. It cannot be relied on in the absence of proof of progress and efficiency in any national industry. Protection may be a necessary precaution in the early days of an industry or when artificial economic conditions are prevailing. It is not in itself alone a remedy. The position as it appears to me is that while it is possible for each of the dyemaking countries to produce nearly 100 per cent. of its requirements, this in itself is not sufficient. England could then hope for an output of about 40,000,000 pounds; American, 65 million pounds; France, Italy, and Japan about 20 to 25 million pounds each. This is solely on the assumption that each of these countries is prepared to pay the price involved in doing so. But none of these countries would then be producing a sufficient quantity to produce at the world's lowest market price. As far as Germany is concerned I imagine the case might be different. The whole problem revolves around the position of the non-producing countries. If the requirements of the whole world for dyestuffs is taken at the estimated figure of 350 million pounds, and England, America, France, Italy, and Japan consume (and provide) about 180 million pounds of this amount, there still remain markets for about 170 million pounds. If Germany were to secure all these markets she would attain a production of about four times that of England, or nearly three times that of America. If all other things were nearly equal, and they are not, this larger quantity alone would mean cheaper production. German prices would then be lowered, and inevitably the national resistance in each of the countries would weaken, and Germany would ultimately regain the position she held before the war in the industry.

"I do not say this will happen. I merely point to the danger. In fact, I think it need not happen, provided the danger is recognised in time. Two courses are open to us: we can, for example, make an agreement with Germany, or Switzerland, or America, and endeavour to maintain the position to which we

have attained. In which case I postulate that the agreement should be between the whole industry in each country. The alternative is to continue the protection now in force in this country. But we must resolutely forget we have that protection, and develop our industry on such a basis of efficiency that we secure a sufficiently large proportion of the world's business, so that we cannot be undersold in the neutral markets.

" I am not at all pessimistic as to the result once we are aroused to the position which faces us, and there are several points in the case which make for optimism. I place first the fact that the assistance which other branches of chemical industry have been prepared to give to the dyestuffs industry stands a greater chance of acceptance to-day than ever before. Secondly, there has been a stirring up of the chemical brains of this country, which holds the promise of great achievements. There is no branch of chemical industry in which revolutionary discoveries are more likely to be made than in the dyestuffs industry. These discoveries are quite likely to happen in this country as in any other. Thirdly, I doubt whether we have not placed an exaggerated value on experience, very valuable as it is."

Quoting from a declaration, Mr. Woolcock said that our Charter :—' is the settled opinion of the Government that for national security it is essential that synthetic colour-making factories should be in existence, and be maintained, should be equal in extent to that of any other possibly hostile nation. It is the settled opinion of the Government that this should be brought about without placing the textile and other colour using industries in an unduly disadvantageous competitive position.'

" That," he said, " was the settled opinion of the Government in 1920 ; it is the settled opinion of this country to-day."

Summary of the Annual Report of the Council

THE Council's annual report shows that the number of members on the register at July 14, 1925, was 4,853, as compared with 4,830 on July 9, 1924. Since the last annual meeting, 395 members had been elected, 19 former members had been restored to membership, and the losses through death, resignation, etc., had been 391.

The Council regretted to have to record the deaths during the past year of 44 members, of whom eight were original members, including Sir George Beilby, F.R.S., President of the Society in 1898–99 ; Sir Edward Thorpe, C.B., F.R.S., President in 1894–95 ; and Viscount Leverhulme, the Messel Medallist in 1924.

Active Propaganda

As pointed out in the annual report of 1924, the Society lost a considerable number of members in recent years owing to unemployment and other causes, and there had been also a distinct falling off in the number of applications for membership. The Council had given much anxious consideration to these facts and an active propaganda had been carried on with the object of repairing the losses which had been sustained. Posters supplying information regarding the Society and pointing out to students the advantages of membership, had been sent to all Universities and Technical Colleges in the British Empire ; a strong endeavour had been made to bring back into the Society former members who had resigned or who had dropped their subscriptions ; and much had been done at headquarters and by local committee in the way of bringing the advantages of the Society and its *Journal* before individual chemists. By permission of the Council of the Dutch Chemical Society a letter had been sent to each of the members, with full particulars regarding the Society and a form of application for membership. As an inducement to persons to become members, the entrance fee had been suspended for the year 1925. The result so far of these endeavours had been satisfactory, the number of new members for the current year being 328, as against 171 for the same period of last year. The following table showed the gains and losses in membership during the past five years :—

	1920–21	1921–22	1922–23	1923–24	1924–25
Membership at beginning of year ..	5,612	5,654	5,270	5,060	4,830
Gains	472	282	288	268	414
Losses	430	666	498	498	391
Net Gain or Loss ..	+42	−384	−210	−230	−23
Membership at end of year	5,654	5,270	5,060	4,830	4,853

Council Changes

Mr. W. J. U. Woolcock, C.B.E., retired from the office of President at the close of the annual general meeting, and the Council had nominated him for re-election for the year 1925–26.

Mr. E. V. Evans had been re-elected Honorary Treasurer, and Dr. Herbert Levinstein had been elected Honorary Foreign Secretary in place of Sir William J. Pope, K.B.E., F.R.S., who had been nominated a Vice-President. The four Vice-Presidents who retired this year were Dr. H. Levinstein, Professor G. T. Morgan, F.R.S., Mr. S. J. Pentecost, and Professor R. F. Ruttan. To these vacancies the Council had nominated Dr. W. R. Hodgkinson, C.B.E., Dr. Alfred E Macintyre, Sir William J. Pope, K.B.E., F.R.S., and Mr. Edwin Thompson.

Four ordinary members retired from the Council. To fill the vacancies thus created, five nominations had been received, and a ballot was being taken.

The Council had received an invitation from the London Section to hold the annual meeting in London in 1926, and recommended its acceptance.

The Council had awarded the Society's Medal for 1925 to Mr. Walter Reid, President of the Society in 1910-11.

Finance

The audited Balance sheet and Statement of Income and Expenditure of the Society and of the Messel Fund for the year ending December 31, 1924, would be laid before the annual meeting. They were published in the Society's *Journal* for June 26, 1925.

"The Journal"

The Council had continued to give the most careful attention to the development of the *Journal*, and a very large saving in the cost of publication had been effected. It had been decided after very careful consideration, to continue to publish the issues weekly. The *Journal* for 1924 (52 issues) contained 2,706 pages of text (Review, 1,306 ; Transactions, 370 ; Abstracts, 1,030) compared with 3,026 in 1923. The number of pages of advertisements in 1924 was 1,334 as compared with 1,348 in 1923. The Committee appointed in 1923 to assist in carrying on the publication of the Transactions and the Annual Reports of the Progress of Applied Chemistry was re-elected. It consisted of the following : Messrs. J. L. Baker, W. H. Coleman, J. W. Hinchley, W. R. Hodgkinson, E. Grant Hooper, Walter F. Reid, W. G. Wagner, with Mr. T. F. Burton as Editor.

The ultimate aim of the Bureau was to effect the unification of British abstracts to the extent of producing a combined issue of pure and applied abstracts under one cover. This was considered impracticable for the present, and the Committee had put forward the proposal that only one abstract be prepared, whereby an estimated overlap of about 10 per cent. would be avoided and a corresponding economy in cost obtained.

The Society had taken part in the activities of various bodies through representatives specially appointed by its Council, and an arrangement had been made by which Fellows of the Chemical Society who were not members of the Society of Chemical Industry, could obtain the abstracts in applied chemistry, and members of the Society of Chemical Industry who were not Fellows of the Chemical Society could obtain the abstracts in pure chemistry ; the annual subscription in each case was 30s.

The Late Sir George Beilby

A proposal had been received from the Institute of Chemistry for raising a memorial to the late Sir George Beilby, and a joint committee had been formed to consider the question.

Grants had been made during the past year to the Library of the Chemical Society (£100), and to the British Empire Exhibition (£250). A donation of £5 was made to the library of the Newcastle-on-Tyne Chemical Industry Club.

Annual General Meeting: Society Finance

The annual general business meeting of the Society was held on Tuesday morning in the Philosophical Hall, Leeds.

Welcome from Civic and University Authorities

THE DEPUTY LORD MAYOR (Councillor John Lambert) in the unavoidable absence of the Lord Mayor of Leeds, offered the Society a hearty welcome on behalf of the City of Leeds. Leeds and those associated with its industries very much appreciated the unostentatious research which some of those present at the meeting that morning were in the habit of perpetuating in their various spheres because Leeds depended in a large measure upon the success of such work. Whilst Leeds could not claim to have produced many great men of science, yet there was present that morning a valuable citizen and a gentleman for whom they had a very great regard, Sir Edward Brotherton, who had some connection with chemical industry.

DR. J. B. BAILLIE (Vice-Chancellor of the Leeds University) also gave the Society a hearty welcome to Leeds on behalf of the University. This was the first occasion on which the University of Leeds had offered a welcome to the Society when it had visited the City. When the Society last met in Leeds, 30 years ago, there was no University of Leeds. He believed they would appreciate that the University was doing its best to foster and encourage the scientific side of industry. Science nowadays, as the Society of Chemical Industry indicated, meant business. That was a comparatively recent discovery. Without the science of chemistry, the industries in the City of Leeds and elsewhere could not be carried on. It had also been discovered that science meant team work. As a scientific society such as the Society of Chemical Industry implied, it was impossible to do the work of science nowadays without co-operation between individuals and industry. That was an enormous advantage. A society like theirs also showed that science created a new form of human fellowship, and he was not certain whether that, after all, was not the most important thing it did. It was a capital thing, no doubt, to get to the bottom of the roots of nature, to mould the forces of nature for human welfare—to build ships and tall chimneys and produce vast industries on the basis of heavy chemicals and light chemicals—that was all excellent, but after all was it not more important that through the study of science we should be able to bring human minds more closely into touch with one another? A society like this was able to bring human beings into closer social fellowship with one another on the basis of knowledge. It was stated by Plato that the best type of human society should consist of philosophers and those highly taught and highly trained in the domain of science. A society such as the Society of Chemical Industry was an approximation to Plato's idea of the best human republic.

THE PRESIDENT briefly acknowledged the warm welcome that had been given to the Society in Leeds.

Presentation of the Society's Medal

After scrutineers had been appointed for the ballot for members of Council, the minutes of the last annual general meeting were taken as read and adopted.

THE PRESIDENT said that he now came to a part of the programme which to him was undoubtedly the pleasantest and possibly one of the most genuinely delightful functions which they would have whilst they were at Leeds. It was his duty to present the Society's medal to their very old friend and distinguished colleague Mr. Walter F. Reid. It was 14 years since the Society had visited Yorkshire at the invitation of the Yorkshire Section, and on that occasion Mr. Reid was the President of the Society, and occupied the Chair at that meeting at Sheffield. In proposing a vote of thanks to Mr. Reid for his Presidential Address, Dr. Messel said that he thought Mr. Reid had not laid sufficient stress on his own excellent work in connection with explosives and especially in connection with the gelatinisation of guncotton. His were the first practical attempts to tame what had up to then been an untameable material. He (Mr. Woolcock) did not think he could do better that day than to recall those words of Dr. Messel because they were a tribute which could be wholeheartedly adopted.

Mr. Reid had been a pioneer in many industries at home and abroad where his knowledge, experience, and powers of invention had been of tremendous service. He would simply mention smokeless powder, linoleum, and the cement industry, all of which owed much to Mr. Reid. Then, in their own *Journal*, Mr. Reid's articles over a considerable period had always been received with the greatest possible interest. He had also taken an unusually large part in the discussions at meetings of the Society. In view of the various positions which he had occupied, it might not have been possible for Mr. Reid to contribute as many papers as some others had done, but always in discussions he was able to take part and add something which was useful and supplemented the knowledge of those present. His invaluable work on the Publications Committee was familiar to every member of the Council. His encyclopædic knowledge and, better still, his ripe judgment, were always at the disposal of the Council. He had been President of the Society, and Chairman of the London Section, and a member of the Council for many years. As far as outside bodies were concerned, he had done service on a very large number, and had held prominent offices in them. The Society was deeply indebted to Mr. Walter Reid for zealous and important services rendered ungrudgingly and continuously over a very long number of years, and in recognition of this and of the active part which he had taken in the promotion of British chemical industry, the Council of the Society had unanimously decided to award him the Society's medal for 1925.

Loud and continued applause greeted the presentation of the medal to Mr. Reid.

Mr. Walter Reid's Reply

MR. WALTER REID, in acknowledging the medal, said he had only tried to do his best in the interests of the Society in his various positions. He was one of the original members, and when they started things did not look promising, to say the least. They had been told that morning that everybody must work together, and he himself was of that opinion and always had been. At the time the Society was founded, however, other opinions prevailed, and there was nothing more pleasant to him to-day than to see at the head of the Society a gentleman in Mr. Woolcock, who had made himself so prominent in another field of chemistry, pharmaceuticals. Mr. Woolcock had learned all there was to be learned in pharmaceutical chemistry, and he would be excused if he said that the Society did not meet with very much support from chemists at the beginning. Therefore, it was a matter of great gratification that Mr. Woolcock occupied the Presidential Chair now. Referring to the charge that Leeds was a dirty city, he believed—and he had some reason for saying so—that the coating which was sometimes found on buildings in Yorkshire was a preservative. It rather seemed that if a number of coats of varnish of Yorkshire coal were put on the outside of the Houses of Parliament, the chemical constituents of the stone would be preserved, and we should not have to spend half a million or a million sterling, as was now proposed. He believed that the magnesium limestone stood up better in towns where there was a little smoke to help it. He did not speak without some knowledge of the subject, because he was a member of the Council both of the Coal Smoke Abatement Society and also of the London Society.

The Romance of the Cement Industry

If he might touch upon a personal matter for a moment, he would refer to an industry in which he was specially interested, the Portland cement industry. His father was one of the first manufacturers of Portland cement. His father was one of the engineers of the Manchester-Liverpool railway under Brunel, and it was then that he formed such a good opinion of the cement that had been made that he started some works to produce it. In those days the wagons used to queue up along the road over night to get a cargo of cement in the morning, and before the day had gone very far all the cement had gone. Those were flourishing days for the Portland cement industry, and it should not be forgotten that Leeds was the originator of that industry. It was Aspdin of Leeds who first discovered Portland cement. Some people who took their knowledge from books and patent specifications had hinted that that was not the case, but it was Aspdin who first discovered Portland cement and his

(Mr. Reid's) father reproduced the material that Aspdin made. The roads in Leeds were repaired with a calcareous material, and Aspdin at first collected the road dust from the scrapings of the roads in Leeds and Wakefield, and this limestone dust was turned into cement. It was rather a curious coincidence that Portland cement, having originated on the roads of Yorkshire, should now be the chief constituent of the roads of the greatest cities of the world, including London.

Another matter which he would like to speak of in connection with Leeds was the explosives industry. When the War broke out the supply of explosives, as everybody knew, was much too small, but the Yorkshire manufacturers came to the aid of the Government, and produced enormous quantities. The point, however, which he wished to make was that owing to the care with which the Yorkshire factories were conducted, they had the minimum number of accidents of all the explosives factories in the country. That said a great deal for the powers of organisation in Yorkshire. In conclusion, Mr. Reid said that, although he had many medals and tokens of regard, he should treasure most of all the medal of the Society of Chemical Industry.

DR. E. F. ARMSTRONG, proposing a hearty vote of thanks to the President for his address (reported on page 56) and for his services during the year, said that Mr. Woolcock was one of those people who proved the statement often made that chemists were born and not made. Mr. Woolcock had not gone through the ordinary methods of the making of a chemist, and the result was that he was what he was and what he was born to be. He felt quite certain that in a few years' time they would find that Mr. Woolcock had a secret laboratory, and that he had invented and made the new dyestuffs, and made some of those revolutionary discoveries for which they were all waiting. (Laughter.) It was particularly pleasing to hear a pronouncement from the presidential chair bearing very largely on economics, because he was certain that it was the neglect of the economic factor amongst chemists which had been one of the points upon which they had laid themselves open to criticism. As an industrial society meeting in an industrial town it was fitting, perhaps, for one moment to reflect upon the tragic fact that Great Britain to-day was departing from industry, which had made us what we were, and was slowly but definitely passing into the hands of the merchant. Napoleon had reproached us for being a nation of shopkeepers, and he thought that secretly we had always rather been proud of that reproach. To-day, everything was being done from the point of view of the merchant by the Government, in the City of London, and in the whole treatment of the currency, and as a result—the inevitable result—industry had had to face blow after blow. To-day, the Press told us that the conditions were almost too severe. The whole of the brunt of the socialistic legislation of the last few years—mostly imposed by Conservative Governments—had fallen on the shoulders of industry. Industry was faced with all sorts of difficulties and troubles as the result of this policy. There need be no unemployment in Great Britain if the favours shown to the merchant class had been bestowed instead on industry. That statement was an entirely calm and unexaggerated statement of the facts. The question was, accepting this position, what could be done to remedy it ? He believed it would be remedied very largely by the efforts of scientific men, including the engineers of this country. What was wanted particularly was leadership, and in their President at any rate chemists could claim that they had found a leader.

The vote of thanks was accorded with acclamation, and was briefly acknowledged by the President.

The Journal

Mr. E. V. EVANS (Hon. Treasurer) then presented the accounts and in doing so said that although the Council had hoped to be able to show a balance on the right side this year, that was not the case. The loss last year incurred in the production of *Chemistry and Industry* of £5,000, however, had been reduced to £725. The cost of producing the journal had been £5,200 less, whilst the expenses of the society had been about £300 less than in 1923. Whilst there had been a total reduction of expenditure of £5,500, the revenue was down by £1,250, making a net saving during the year of £4,250. The final deficit, therefore, was of the order of £750. It would, said Mr. Evans, be a simple matter to curtail the responsibilities of the Society so that the accounts would show a surplus. By reverting to the publication of a more academic periodical and to one issued less frequently, expenditure would be reduced, but the journal would fail to be of universal interest in the chemical industry, and would interest only the chemists and chemical engineers engaged in it. Although the cost of producing the journal now was not more than it was in 1920, there were 1,000 more pages, whilst the page was some 10 per cent. larger.

Mr. F. H. CARR, seconding the adoption of the accounts, said that Mr. Evans had not done himself justice in presenting them, because the reduction of a deficit of £5,500 to a deficit of only £750 was really a great achievement. He moved that a hearty vote of thanks be accorded Mr. Evans for his work as Treasurer during the past year, and the motion was carried unanimously.

THE PRESIDENT, speaking on the report of the Council, said that although there had been a larger number of new members elected during the past year than usual—the Council had passed 30 new names at its Council meeting that morning—he agreed that an increase of membership was not the be-all and end-all. Nevertheless, it was only by getting more members and consequently more money that the usefulness of the Society could be extended. He moved the adoption of the report, and Mr. JOHN EVANS (Chairman of the Yorkshire Section) seconded.

Mr. BROWN complimented the Society on the form in which the accounts had been presented, and upon the reduction in the publishing expenses of *Chemistry and Industry* from £4,100 in 1923 to £415 in 1924, and the Hon. Secretary said that the main reason for that reduction was the sale of copies to members of the Chemical Society.

The report was adopted.

A resolution standing in the name of Mr. Wm. McD. Mackey (Leeds), that a return should be made as to the practice of reporting the proceedings of each section, giving the papers and discussions, was not moved owing to the absence of Mr. Mackey through illness. The President expressed the hope that Mr. Mackey would have a speedy recovery.

The 1926 Meeting in London

DR. BERNARD DYER, as the retiring Chairman of the London Section, invited the Society to hold its annual meeting in London in 1926. The matter, he said, had already been brought to the notice of the Council, and the London Section had formed a small committee, which had already held one or two meetings to discuss the arrangements, but it needed the decision of the meeting as to whether the meeting should be held in London next year. He recalled that the last meeting in London was in 1919, and he promised the Society an interesting and pleasant time if the invitation of the London Section was accepted.

Mr. C. S. GARLAND, who was recently elected Chairman of the London Section, seconded the proposal to hold the meeting in London next year, and the invitation was unanimously accepted.

Auditors

Price, Waterhouse and Co. were re-elected auditors for 1926, on the motion of Mr. GRANT HOOPER, seconded by Mr. R. F. STEWART.

New Councillors

The result of the ballot for the four vacancies on the Council was announced as follows: Mr. John Allen, Mr. Julian L. Baker, Professor C. Gibson, and Dr. H. Houlston Morgan.

"Phases of Modern Science"

UNDER the title "Phases of Modern Science," the Royal Society, through its British Empire Exhibition Committee, has published an interesting volume. The first section is devoted to original articles by leading authorities in various spheres, and sets out to indicate the state of science at the time of this year's Exhibition. Notable contributions include "Radiation," by Sir Oliver Lodge; "Atoms and Isotopes," by Dr. F. W. Aston, and "The Electron" by Sir Joseph Thomson.

The second section is really a catalogue of the Society's exhibits at Wembley, but it is more than a mere list in that all the apparatus and the processes displayed are described at length. The book as a whole constitutes a compact work of reference and a valuable record for the future of science as it stood in 1925.

Boric Acid Manufacture in Tuscany

In a paper read before the Society on Tuesday, Prince Ginori Conti described the natural sources of boric acid supply in Tuscany, and outlined the industrial processes employed.

BORIC acid is widely used, both for pharmaceutical and for industrial purposes; details of its manufacture were, however, not very generally known, and it might consequently be of some interest to give an account of the origin and the methods of manufacture in Tuscany, where boric acid was obtained as a natural product.

Boric acid was generally obtained from calcium borates, of which there were enormous deposits in various parts of the world, especially in North and South America and Asia Minor.

Native boric acid (H_3BO_3) was found in Tuscany, in a region where there were curious volcanic manifestations of powerful jets of natural steam accompanied by gases and water and which were known locally as "soffioni" (which could be translated as "vents"). In their natural conditions these jets issued from crevices in the soil and were generally accompanied by hot water, and the corrosive action of the steam tended often to form a small crater round the jet itself. The steam contained various substances, including boric acid, whilst the gases were chiefly composed of carbon dioxide, methane, hydrogen sulphide, and small but quite appreciable quantities of rare gases such as argon and helium.

The phenomenon was undoubtedly of volcanic nature, and although the source of all the jets appeared to be the same, the origin was not easy to account for.

Professor Perrone believed boron to be the result of the dissociation of tourmalines contained in the granites which were found in Elba, and of which layers might be existing under the sedimentary rocks of the "soffioni" district. Further studies, however, had rather upset all previous theories.

Near all the principal groups of "soffioni" works have been erected, artesian wells had been drilled for obtaining the natural steam under better conditions, and the old primitive "soffioni" and "lagoni" (small ponds) had gradually diminished in number and in strength.

Early Attempts at Utilisation

The first attempts to utilise the "soffioni" steam for obtaining boric acid date back as far as the early years of the nineteenth century. The actual discovery of the presence of boric acid in the steam was made in 1777, but in 1827 Francesco Larderel, the real founder of the industry since 1818, resorted to the use of natural steam as a heating medium; thus all necessity for fuel was abolished and boric acid was obtained cheaply and simply.

Larderel began by building a brickwork dome over the "lagoni," thus obtaining through separate openings the boric waters and the steam, which he conveyed separately by means of wooden tubes to his concentrating apparatus, and the steam of other soffioni was made to pass in addition to that of the original soffione, and the result was a gradual enrichment in boric acid of the water itself. The ordinary lagoni water contained very small quantities of boric acid—something like 1 per 1,000—but the gradual enrichment allowed a strength of 3 to 4 per 1,000 to be reached. The concentrating process was at first carried out in large vats.

For some fifty years the Tuscan boric acid works were practically the main producers of boron chemicals. Their output was then limited to an 82 per cent. type of acid which was widely exported, especially to England, where it was further treated, for the first borax had been manufactured on the premises, but the exportation of acid was found to be more convenient.

About 1881 the immense deposits of borocalcites in California began to be exploited, and the demand for boric acid gradually decreased. To meet this crisis the Larderel works began again in 1884 manufacturing borax, and Prince Conti started refining boric acid, so that when he took over the management of the Larderel establishment, he abolished the "lagoni" and he brought purer water into contact with the soffioni steam. The water took up boric acid from the steam and was drained off. In some cases a concentration of as much as 10 per 1,000 could be reached, but generally it was about 3 to 4 per 1,000.

The concentrating process was carried out by means of long shallow basins made of sheet lead, over which the water flowed. The natural steam for heating flowed under the evaporating plane in a flue, and its direction was contrary to that of the water. A large vat received the liquor which, from a concentration of 3 to 4 per 1,000, finally became as much as 10–12 per cent. The liquor was allowed to cool and the boric acid crystallised. The ultimate mother liquors were used for obtaining ammonia, which they contained in appreciable quantities.

A few words were necessary to give some idea of the method employed for obtaining the required quantities of natural steam. Artesian drillings for that purpose were begun since 1843, but the technique was very primitive. At present both percussion and rotary drilling machines were employed, and the wells had been greatly increased in diameter, up to as much as 2½ ft., whilst in depth over 600 ft. had been attained.

The steam of the soffioni was first freed from its accompanying gases and then used for feeding low-pressure steam turbines. The waters which came from the condensers and other apparatus of the power plant contained boric acid and were passed on to the chemical department. From those waters alone they obtained some thousands of pounds of acid per diem at Larderello alone.

This acid was crude acid, which contained about 82 per cent. of boric acid. By his actual process he obtained on a large scale purer types with the same apparatus by suitably graduating concentration and by taking successive crops. This easily and quickly allowed a direct production of 99 per cent. grade acid.

The refined acid, which contained 99·5 per cent., was manufactured from the crude type by solution and subsequent recrystallising. Other varieties, such as powder and paillettes or flakes, which were in request for medicinal uses, were also manufactured.

Valuable By-Products

Borax was another product manufactured by the interaction of boric acid with sodium carbonate. Boric acid and borax were the principal outputs, but ammonia in the mother liquors and carbon dioxide in the gases accompanying the soffioni steam were carefully separated and made to react, the result being ammonium carbonate. In a short time he would have ready a new plant for compressing CO_2 in bottles for industrial purposes. Sodium perborate was another product widely used for bleaching and in the manufacture of soap, etc., and exported in large quantities.

Boric acid as a direct product was only obtained at their works, and much extension was anticipated. They had mechanical shops, a small foundry, and a complete plant for remelting and milling lead plates. They also manufactured their own oxygen by an electrolytic process for autogenous soldering, which was extensively employed in the manufacture of iron tubes. The scientific side of the industry was not neglected, and a well-equipped chemical laboratory was installed at Larderello for relative research.

Dyestuff Licences for June

THE following statement relating to applications for licences under the Dyestuffs (Import Regulation) Act, 1920, made during June has been furnished to the Board of Trade by the Dyestuffs Advisory Licensing Committee:—The total number of applications received during the month was 458, of which 364 were from merchants or importers. To these should be added 44 cases outstanding on May 30, making a total for the month of 502. These were dealt with as follows:—Granted—328 (of which 293 were dealt with within 7 days of receipt); referred to British makers of similar products—100 (of which 67 were dealt with within 7 days of receipt); referred to reparation supplies available—25 (all dealt with within two days of receipt); outstanding on June 30, 1925—49. Of the total of 502 applications received, 385, or 77 per cent., were dealt with within 7 days of receipt.

Chemical Trade Returns for June

Exports and Imports up on Last Year's Figures

IMPORTS of chemicals, drugs, dyes, and colours (excluding mercury) for June totalled £1,262,862—an increase of £244,046 as compared with June, 1924, and an increase of £201,403 over the preceding month. The exports are valued at £1,951,446, an increase of £48,802 on last year's results and a decrease of £107,344 on the figures for May this year.

In the imports considerable increases are recorded for tanning extracts, white lead (dry), calcium carbide, nickel oxide, and ground barytes. On the other hand crude glycerin has dropped from 3,431 tons to 10 tons, and potassium and sodium compounds and alizarine are down considerably.

On the export side France and the Dutch East Indies have taken no sulphate of ammonia, although the aggregate export is fairly stable. There is a remarkable drop in benzol and toluol, naphtha, distilled glycerin, and some sodium compounds—especially sulphate. Copper sulphate is up, and tar oil, creosote oil, etc., figures are more than doubled.

IMPORTS.

		Quantities. Month ending June 30.		Value. Month ending June 30.	
		1924	1925	1924	1925
				£	£
Chemical Manufactures and Products—					
Acid, Acetic	Tons	951	847	34,972	39,867
Acid, Tartaric	Cwt.	3,121	4,189	16,842	20,154
Bleaching Materials	,,	5,302	5,286	5,732	6,705
Borax	,,	8,796	5,080	10,660	5,944
Calcium Carbide	,,	42,155	52,894	27,976	35,897
Coal Tar Products	Value	—	—	32,129	134,133
Glycerin, Crude	Cwt.	3,431	10	8,330	28
Glycerin, Distilled	,,	20	70	92	273
Red Lead & Orange Lead	,,	1,919	3,026	3,556	5,697
Nickel Oxide	,,	62	4,039	260	20,582
Nitrate (Saltpetre)	,,	13,495	5,225	15,774	6,654
All other Potassium Compounds	,,	128,710	73,664	30,246	28,987
Sodium Nitrate	,,	108,379	65,104	71,618	41,031
All other Sodium Compds.	,,	31,432	16,600	19,203	13,772
Tartar, Cream of	,,	3,275	4,727	12,821	16,702
Zinc Oxide	Tons	751	1,238	24,883	41,137
All other sorts	Value	—	—	250,769	228,380
Dyes and Dyestuffs—					
Intermediate Coal Tar Products	Cwt.	6	120	119	1,204
Alizarine	,,	1,914	89	15,895	2,265
Indigo, Synthetic	,,	—	—	—	—
Indigo, Natural	,,	64	—	1,925	—
Other sorts	,,	2,885	1,636	71,661	40,312
Cutch	,,	6,474	6,321	9,076	10,838
All other Extracts for Dyeing	,,	6,711	4,669	26,640	13,906
Extracts for Tanning (solid or liquid)	,,	70,146	142,093	65,876	137,256
Painters' Colours and Materials—					
Barytes, Ground	,,	54,935	71,850	14,367	18,101
White Lead (dry)	,,	6,632	14,634	12,601	28,585
All other sorts	,,	82,201	80,250	88,594	105,631
Mercury	Lb.	251,092	194,845	42,972	33,082
Total of Chemicals, Drugs, Dyes and Colours	Value	—	—	1,061,788	1,295,944

EXPORTS.

		Quantities. Month ending June 30.		Value. Month ending June 30.	
				£	£
Chemical Manufactures and Products—					
Acid, Sulphuric	Cwt.	1,145	2,364	1,481	2,610
Acid, Tartaric	,,	1,056	634	4,565	3,436
Ammonium, Chloride (Muriate)	Tons	230	282	8,008	8,495
Ammonium Sulphate—					
To France	,,	200	—	2,600	—
,, Spain and Canaries	,,	10,877	12,535	144,781	151,569
,, Italy	,,	211	138	2,897	1,735
,, Dutch East Indies	,,	375	—	4,968	—
,, Japan	,,	600	998	8,173	11,975
,, British West India Islands (including Bahamas) and British Guiana	,,	1,575	1,556	21,769	20,460
,, Other countries	,,	3,186	4,348	42,170	54,582
Total	,,	17,024	19,575	227,358	240,321
Bleaching Powder	Cwt.	17,216	14,725	9,812	8,085
Coal Tar Products—					
Anthracene	,,	—	381	—	171
Benzol and Toluol	Gall.	275,540	916	23,516	116
Carbolic Acid	Cwt.	12,619	14,621	26,508	22,008
Naphtha	Gall.	6,496	3,727	722	423
Naphthalene	Cwt.	2,387	1,013	1,830	867
Tar Oil, Creosote Oil, etc.	Gall.	2,092,392	4,687,822	85,502	132,528
Other sorts	Cwt.	26,427	33,772	17,625	22,668
Total	Value	—	—	155,703	178,781
Copper, Sulphate of	Tons	1,680	4,406	37,823	95,622
Disinfectants, etc.	Cwt.	38,181	34,193	86,232	80,996
Glycerin, Crude	,,	407	4,274	1,006	11,189
Glycerin, Distilled	,,	17,295	9,299	65,473	36,245
Total	,,	17,702	13,573	66,479	47,434
Potassium Chromate and Bichromate	Cwt.	2,541	1,361	6,198	2,641
Potassium Nitrate (Saltpetre)	,,	1,603	538	3,148	1,007
All other sorts	,,	1,959	2,058	12,970	16,346
Total	,,	6,103	3,957	22,316	19,994
Sodium Carbonate	,,	500,817	572,174	124,858	150,296
Sodium Caustic	,,	145,295	135,845	119,778	105,869
Sodium Chromate and Bichromate	,,	6,455	1,994	12,555	3,240
Sodium Sulphate, including Salt Cake	,,	121,306	65,157	20,123	10,704
All other sorts	,,	60,149	43,239	80,362	55,153
Total	,,	834,022	818,409	357,676	325,262
Zinc Oxide	Tons	208	136	8,553	5,867
Chemical Manufactures, etc., all other sorts	Value	—	—	283,056	276,291
Total of Chemical Manufactures and Products (other than Drugs and Dye-stuffs)	,,	—	—	1,269,062	1,293,194
Dyes and Dye-stuffs—					
Products of Coal Tar	Cwt.	9,802	9,269	82,553	78,873
Other sorts	,,	4,092	4,093	5,512	5,470
Total	,,	13,894	13,362	88,065	84,343
Painters' Colours and Materials—					
Barytes, Ground	,,	6,550	8,657	2,959	3,558
White Lead (dry)	,,	13,981	9,441	32,467	21,647
Paints and Colours, ground in Oil or Water	,,	29,115	39,839	69,667	92,843
Paints and Enamels prepared (including Ready Mixed)	,,	32,529	30,827	106,536	112,473
All other sorts	,,	50,537	53,989	100,069	93,082
Total	,,	132,712	142,753	311,698	323,603
Total of Chemicals, Drugs, Dyes and Colours	Value	—	—	1,902,644	1,951,446

Increased Uses of Nickel

Sir Alfred Mond Outlines New Possibilities

SIR ALFRED MOND, speaking at the annual general meeting of the Mond Nickel Co., Ltd., in London last week, said that on the whole, the position of the nickel industry was healthier than it had been in the past. The uses of nickel as a metal were expanding in every direction, and likely to expand still further, owing to the invention of new compounds possessing remarkable qualities of non-corrosion, electrical conductivity, and the power to stand at very high temperatures, pressure, and tensile tests quite unheard of formerly. These facts all tended to make nickel a metal the use of which was bound to go on increasing in the electrical and engineering worlds. He mentioned the new compound of nickel and iron known as "Permalloy," which, owing to its high electrical permeability, enabled cables made of it to give much quicker service.

Then there were the developments represented by the whole nickel-chrome series of alloys. Some recent researches in that direction had produced a new range of products, which gave possibilities in the higher classes of engineering which up to now engineers had never had. There was no doubt whatever that as we progressed in technical development, there was a continual demand for materials of a higher and more reliable kind.

Referring to the subsidiary company, the American Nickel Corporation, Sir Alfred said that it had been hampered by the necessity for experimental work and by several serious delays, including a fire and a mechanical breakdown. It was, however, now beginning to show progress, and definite developments could now be looked for.

Developments

The Canadian mines were to be developed further, and a sulphuric acid plant was to be erected at the smelting works to utilise waste gases. The refining capacity of the Clydach works was to be increased, and the development of the American Nickel Corporation and Henry Wiggin and Co. was to continue.

Sir Robert Hadfield said that alloys of nickel and chromium could now be made that would give no scale whatever even when heated in an oxidising flame to 1,000° C.

The Association of British Chemical Manufacturers

Report of the Annual General Meeting

THE Annual General Meeting of the Association of British Chemical Manufacturers was held at the Chemical Society's Rooms, Burlington House, Piccadilly, on Thursday, July 9, 1925.

THE CHAIRMAN (Mr. D. Milne Watson), in moving the adoption of the report, said that the chemical industry, like all other British industries, but fortunately not to such a great degree as some other industries, was going through a very serious time: it was a time of danger to all engaged in the industry. Fuller support was given to a trade association in times of prosperity, but a strong association was never so much needed as when trade was bad, as it was at present.

Outlining the work of an association, he said that it was possible that every one of the members of a particular group might be efficient and economic producers of the chemicals for which they were responsible, and yet the business in that branch of the industry might not be good. It might be ruined by indiscreet and uninformed action on the part of the Government, unless there was an Association to prevent such action. It might be set back unless other branches of the industry were prepared to co-operate with it, and such co-operation was only likely if both branches were members of the same Association. The technical efficiency of the group might count for little if such efficiency was not accorded due publicity, and that would not be accorded unless there was an Association to see that it is done. It seemed to him certain that unless any particular firm was absolutely sure of its position, it might become a casualty, so to speak, in the industrial fight, unless it was prepared to act alongside its associates.

Mr. Milne Watson referred in feeling terms to the death of Lord Leverhulme.

The membership of the Council had remained unchanged during the year save that Sir William Alexander resigned his membership on vacating the managing directorship of the British Dyestuffs Corporation. They were fortunate in being able to replace him by co-opting Sir Alfred Mond, whom they are particularly glad to welcome back as one of the founders of the Association. The success of the Faraday celebrations was recorded by the speaker.

The British Empire Exhibition

The British Empire Exhibition had again been supported by the Association, and the chemical industry had played its part well. It had been infinitely more difficult to organise the display in the Chemical Section this year than last, partly because a great many doubted whether the Exhibition would be a success another year, and partly because the enthusiasm that existed last year had, to a certain extent, waned. The result, however, in point of fact had been excellent. The exhibits last year were, as they should have been, classical in their presentation of the scope of British Chemical Science and Industry, and as such they were judged. This year, fortunately, the altered position was foreseen, and a different viewpoint was taken. In the result, they had a Chemical Exhibit which was in many ways a great advance on that of last year. Last year the Scientific Section was the only example of members co-operating. It was repeated this year, but in addition there was a tar exhibit bearing only the legend, "British Tar for British Roads," and that remarkable stand, "The Dyestuffs of Great Britain."

The Association's films had been shown extensively and copies were going to Japan.

Dyestuffs Problems

Two bright spots had emerged in the dyestuffs industry during the year. The first was the closer co-operation which had developed between the dyestuffs industry and other branches of chemical industry. He did not want to overstate the degree to which this had gone. It was perhaps the willingness to co-operate which had appeared which they should welcome, because of the possibilities it held out for the future. Then they were all hoping for great things from the appointment of Dr. E. F. Armstrong to the position of Managing Director of the British Dyestuffs Corporation. (Hear, hear.)

The task before the British dyestuffs industry was a difficult one. We sometimes forgot that there was no country in the world which was attempting to run a dyestuffs industry of its own which was not finding the task difficult. In America an extra 5 per cent. had been added recently to the tariff, and during the first five months of this year twice the weight of foreign dyes had been imported into America as compared with the same period last year. Even in Germany and in Switzerland the industry had its difficulties. The same applied to France, whilst in Italy and Japan the obstacles were even greater. He did not mention this by way of offering any excuse for the Brtish industry, but rather to indicate that in his judgment, however great the efforts put forth by the British makers may have been, they would have to be redoubled before the industry could be said to be safely established on an adequate scale in this country. He trusted, therefore, that the spirit of co-operation which had received some small impetus this year would achieve even greater results in the year which was to come.

Fine Chemical Group

The Fine Chemical Group of the Association had had a fairly quiet year. The Safeguarding of Industries Act expired next year, and it seemed obvious to him that this or any other Government which might be in power would require to know what progress had been made in the manufacture of fine chemicals and what effect the Act had had. The Council was expecting to receive a full report from the Group in the autumn and would then review the whole situation.

The speaker regretted that their representatives in the House of Commons now only numbered two. The policy of negotiation with the railway companies which had always found favour with members had been continued, and with satisfactory results

The Report of the Council was adopted, and after the Hon. Treasurer (Mr. C. A. Hill) had made his statement a general discussion followed.

Dr. G. C. CLAYTON, M.P., said that the other Parliamentary representative and himself were absolutely united and determined that everything should be done that could be done to improve the conditions in the chemical industry generally in the country. There was another matter to which he would like to refer, and that was the co-operation between the heavy chemical industry and the dyestuffs industry. They in the heavy chemical industry were very delighted that Dr. Armstrong had accepted the position that was offered to him, because they felt that he knew the point of view of the heavy chemical industry and that they could co-operate with him in a way which was impossible with anybody who did not really know their point of view.

A Hint to the Universities

Dr. E. F. ARMSTRONG said that he much appreciated what the Chairman and Dr. Clayton had said, and was quite confident that with the help of the members of the Association they would succeed in establishing the organic chemical industry in this country. The position was difficult and he would much prefer to talk about it one or two years hence. There was, however, one thing that could be said with regard to it, and that is that to establish the industry they wanted a large number of chemists of the very best type. There were many chemists unemployed to-day. On the other hand, there was difficulty in finding suitable chemists with broad outlook to initiate new problems. If the Association could bring pressure to bear on the Universities to so alter their course of training as to produce the better class chemists they wanted, it would be so much to the benefit of the industry. He was finding it most difficult to get chemists of the right type. He thought that everybody in the room realised as much as he did the rocks ahead, because of German competition. It would be true to say that the penetration of the German into matters chemical was even wider, more rapid, and more serious to-day than it was in 1914. Such a state of affairs could only be met by an Association like theirs, working through all its members, realising the menace and standing shoulder to shoulder against it.

German Co-ordination

Mr. N. H. GRAESSER thought that one of the main usefulnesses of the Association was the possibility of closer co-operation. The need of that had been even more impressed on him since he recently returned from Germany. He knew the Germans

had got together very closely, but he was amazed to see what developments had occurred in the last year or two. From what he understood of the position there to-day, there was no home competition at all. Everything was co-ordinated inside the country. They had their Fine Chemical Convention, and that consisted of firms working to a common policy. But in the dye industry itself he understood there was only one group. They had bought up all the smaller firms who used to be independent, or had obtained control over them, and they were working as a national industry with no competition in their own country and with a national effort for all outside business. He was told that in this process of co-ordination they had recently made tremendous further steps. One of the directors of a large concern told him that since January they had stopped 4,000 men simply in the transfer of processes to larger scale and power plants. Every plant that was not absolutely up-to-date was simply left, and any plant that could be revised they were spending money on freely. The one hopeful feature, and the one feature that seemed to be causing them any trouble, was liquid capital and the fact that they were up against a condition to which they were unused, in that they were working in a competitive market. The reports on labour were uniformly good. The employers themselves said the men were working splendidly.

The Rt. Hon. J. W. WILSON said that in many cases German plants of an antiquated type had been shut down ; others had been combined into one enormous undertaking, and they had been able not necessarily always to build fresh plants, but to acquire Government plants at low prices and to adapt them for the continued purpose of competition. Therefore he thought it more and more important that they should, like other industries in the country, feel that they had to adapt themselves to newer conditions and, above all, avoid internecine competition among themselves, but work together for the prosperity not only of the home trade but of the chemical trade as a whole, which meant foreign export in competition with the combined forces of both Germany and France conspicuously, but other countries too.

Sir WILLIAM PEARCE said that before the war, when the dyestuff and fine chemical industries in Germany were so great a success, their market was the whole world, and their profits and success were achieved when nobody was able to enter into competition with them. To-day not only ourselves, but America, France, and Italy all had large dyestuff factories, and it was a question whether the Dyestuffs Corporation ought to be asked to carry its present capital. He did not think it could carry a capital such as it had if it had to confine itself to the home trade, because the turnover was so limited. It was obvious, too, that to extend operations abroad and to get foreign trade was a matter of great difficulty, because one had to meet most intensive competition from Germany, America, France, and Italy ; so that he did not think it was properly realised how great was the difficulty of the position of the Dyestuffs Corporation to-day in connection with obtaining a sufficient volume of turnover.

Mr. J. H. DEACON said that sufficient use was not made with regard to the German propaganda that they as individual firms received. Next, he did not think that sufficient attention was paid to the purchasing power amongst themselves.

Mr. E. J. BOAKE desired especially to emphasise the lack of suitable highly trained chemists, without which the fine chemical branch of their industry could not flourish, and the assistance of the Safeguarding of Industries Act.

Mr. D. LLOYD HOWARD also referred to the necessity for the continuance of the Act.

Systematic Treatment of Information

FOLLOWING a successful Conference held at High Leigh, Hoddesdon, in September, 1924, of those interested in special libraries and agencies for the collection, treatment, and distribution of information, a representative standing committee was appointed to ensure continuity of the work, and to arrange for a second conference. The standing committee has been fortunate in obtaining assistance from the Carnegie United Kingdom Trustees. The Committee has named the body "The Association of Special Libraries and Information Bureaux." The second Conference of the Association will be held at Balliol College, Oxford, during the week-end September 25–28 ; full particulars can be obtained from the Organising Secretary, at 38, Bloomsbury Square, London, W.C.1.

British Association of Chemists

The "Third Party Principle"

THE Association has always maintained that in all matters of industrial dispute where resort is made to arbitration, that the technologist ought to occupy a position midway between employer and employed. In many respects his position is unique, and as a third and—as far as may be—an unbiassed party, it is a widely spread opinion that he may be able to fulfil a very useful function in the sphere of industrial dispute.

Owing to matters of greater urgency this question, although it has not been lost sight of, had receded into the background, but during the last few months the whole question has been reopened by *The Times*, which has not only published a leader on the subject, but gave considerable prominence to a letter written by Mr. Richard Hazleton, General Secretary of the Society of Technical Engineers, a society that has always strongly supported this admirable principle.

Efficient Arbitration

There is no question at all that arbitration between the opposed and interested parties is in general foredoomed to failure. This is not to say that both sides may not, after their fashion, have at heart the interest of the whole industry concerned. But it is obvious that they must in certain essential particulars be fundamentally at variance, and that therefore arbitration commenced upon a basis so unsound must finally come to nought. It is, of course, upon these grounds that so persistent a cry for the nationalisation of certain industries is raised. Rightly or wrongly it is supposed that the State is at least disinterested, and that therefore the element of suspicion, which, in modern industrial relations has wrought so much evil, by this means would be reduced to a minimum.

It is not the function of the B.A.C. to maintain or endeavour to controvert a thesis so complicated, and one which would involve in its practical realisation a change of principle so drastic ; but it is not unreasonable to maintain that the principle behind this demand is in some respects sound. A disinterested arbitrator is required, and if his findings can be enforced, such a judge would prevent many a ruinous strike and dispute. Having regard to the condition in which industrial relations find themselves at present, it does seem most necessary that the present system of bargaining backed by ill-veiled threats should cease, and that some colder and more judicial system should succeed it.

Claims of the Technologist

The technologist is for two reasons one whose qualifications are such that he might reasonably be expected to fulfil this need. His position in industry compels him to take the long view. For his own sake he is bound to consider the industry in which he is engaged as a whole, and to examine the view both of employer and of employed. He is to a large extent responsible for the prestige of the industry, and where that prestige falls, his prestige falls with it. On the other hand, his training develops the judicial habit of mind, and it is, or it ought to be, his aim to eliminate emotional considerations from his scientific duty. We are far from asserting that there ought to be absent in the scientist that excellent gift of charity, but an arbitrator should be free of that revolting sentimentality which seems to prevent the retention of a sense of proportion and perspective.

The Association, therefore, welcomes this re-awakening of interest in the Third Party principle, a principle that ought to go far to place industrial relations upon a more satisfactory basis. It is proposed, if possible, to hold a Third Party Conference during the coming winter, and should this materialise we would appeal to all chemists to give the conference their close attention.

Membership of the Association makes it possible for individual chemists to keep more closely in touch with these important questions than is possible by any other means. All chemists ought to be willing and able to express their views in such matters, and an appropriate mouthpiece, in the Association, is at their disposal.

All communications concerning the Association should be addressed to the General Secretary, the British Association of Chemists, "Empire House," 175, Piccadilly, London, W.1.

H. T. F. R.

Coke and By-Products

Present Outlets Insufficient for Disposal

At a meeting of the Committee on Industry and Trade, held at the Board of Trade on Wednesday, evidence was given by Mr. Richard A. Pease, of Pease and Partners, Ltd., Darlington, on behalf of the National Association of Coke and By-Product Plant Owners, his evidence covering coke-oven coke and its by-products, as distinct from gas coke.

Particular attention was paid by Mr. Pease to the two main channels of disposal of coke—namely, blast furnaces and export. Facts and figures were tendered by him to show the extremely low state of the markets in both these directions. The coking and by-product industry was one that must be worked continuously by day and night shifts seven days a week, and it was important from the standpoint of cost of production that the two main sources of disposal named should be kept open and developed as much as possible.

The position in each case to-day was described as deplorable.

Figures were given showing the increase, comparing the year 1913 with the year 1924, in such items of cost as raw materials, rates and taxes, State and other insurances (including Workmen's Compensation), and railway rates, and shipping charges.

The evidence covered matters of administration, cost of new construction, and maintenance of coking plants, and the development of processes and research work. Mr. Pease also described the position in foreign markets, particularly Germany and France, and detailed methods of sale, agency, and payment for coke and by-products delivered in foreign countries. Witness expressed the strong opinion of his Association that the Government should not ratify conventions and give legislative effect thereto in this country without having regard to the action taken in competitive countries.

Late Lord Leverhulme's Will

The will of the late Lord Leverhulme has been proved at a "provisional" valuation of £1,000,000, so far as can at present be ascertained, and probate has been granted to his son and Messrs. Harold R. Greenhalgh, Francis D'Arcy Cooper, and John McDowell, directors of Lever Brothers, to each of whom he left £5,000 for the executorship.

He left one-half of the total of fully-paid Ordinary shares in Lever Bros., Ltd., issued at his decease (mentioned in an earlier statement as being 120,000 shares at £10 each) upon trust for a period of 21 years after the decease of the longest lived survivor of his executors, his descendants living at his decease, or the descendants of Queen Victoria living at his decease. From this they are to pay three months' salary for each complete year of service (no one bequest exceeding five years' wages or salary) to each of his domestic and personal staff on his private salary or weekly wages list not being a co-partner in Lever Bros., Ltd., or under notice. The balance is to be distributed in varying percentages, including 10 per cent. to the chairman for the time being of Lever Brothers, Ltd., for his own benefit, 10 per cent. upon trust for the Viscount Leverhulme for the time being, 20 per cent. equally between the persons (other than the chairman of Lever Brothers, Ltd.), constituting the Special Committee of Lever Brothers, Ltd., except that the chairman of that Committee is to be paid double the amount paid to each other member; 20 per cent. to persons (other than the chairman of Lever Brothers, Ltd., and members of the said Special Committee) who shall be directors of Lever Brothers, Ltd., or chairman of any of the Associated Companies.

All other of his property he left to his son.

Alleged Water Pollution

In the Chancery Court at Manchester on Thursday, July 9, the Deputy of the Chancellor, Mr. Courthope Wilson, K.C., resumed the trial of the action brought by Thomas Murdoch, trading as Walton and Murdoch, Medlock Vale Bleachworks, near Clayton Bridge, against the Clayton Aniline Co., Ltd., in respect of the alleged pollution of the Lumb Brook through water draining off a tip at Droylsden on which the defendants deposit refuse from their works. This was the seventh day of the hearing. (See The Chemical Age, May 30, June 6, and July 4.)

Dr. Arnold Schedler, the technical manager for the defendant company, was cross-examined by Mr. C. Atkinson, K.C. Dr. Schedler said that instructions had been given to the employees to discriminate as to the material to be tipped at Droylsden, the objectionable stuff being sent elsewhere, but occasionally the instructions had been disobeyed and the drainage from the tip had then discoloured the stream for a few yards. In the present state of the tip there was no danger; should any arise steps would be taken to prevent any injury being done to the plaintiff.

The Faraday Society

At the annual general meeting held on Monday, July 6, the following officers and members of the Council were elected: President: Professor F. G. Donnan. Past-Presidents: Sir Robert Hadfield, Professor Alfred W. Porter, Sir Robert Robertson. Vice-Presidents: W. R. Bousfield, Professor C. H. Desch, Dr. W. H. Hatfield, Professor W. C. Lewis, C. C. Paterson, Professor A. O. Rankine, Dr. E. K. Rideal. Treasurer: R. L. Mond. Council: Professor E. N. da C. Andrade, C. R. Darling, Dr. J. E. Coates, Dr. F. A. Freeth, Dr. B. A. Keen, Dr. E. H. Rayner, Dr. F. C. Toy, H. T. Tizard, Dr. R. S. Willows, Professor E. C. Williams.

The report of the council draws attention to the fact that general discussions on the following subjects were held during 1924: (1) "Fluxes and Slags in Metal Melting and Working," (2) "Physical and Physico-Chemical Problems Relating to Textile Fibres," (3) "The Physical Chemistry of Igneous Rock Formation," (4) "Base Exchange in Soils." It is the policy of the Society to co-operate wherever possible with other scientific societies, and three of these discussions were held jointly. The policy of co-operation is also extended to the American Electrochemical Society, in that by a mutual arrangement, the transactions of each society are supplied to the members of the other society at a special rate. In addition to the general discussions, four ordinary meetings were held. One section of the report deals with the convention that should be adopted as regards the sign of the potential on an electrode. The Council was not prepared to make an official pronouncement on the subject, and the opinion is expressed that such matters should be settled by international agreement. During the year, 33 new members were admitted to the Society. There was an adverse balance of £293 7s. 4d. on the year's work, due to the great amount of material published. While loth to diminish the Society's activities, it has been decided to limit the general discussions for the time being to two a year, and it is expected as a result to balance income and expenditure during the present year.

Oil and Colour Chemistry

Not only oil and colour chemists, but manufacturers in various spheres, will welcome the "Oil and Colour Chemistry Monographs," edited by Dr. R. S. Morrell, F.I.C., Ph.D.—the first two volumes of which will be published by Ernest Benn, Ltd., 8, Bouverie Street, London, E.C.4, on Monday next. These two works are "Cellulose Ester Varnishes," by F. Sproxton, B.Sc. (British Xylonite Co.), and "Blacks and Pitches," by H. M. Langton, M.A., B.Sc., A.I.C. (director of J. B. Walker and Co., Ltd.). Their comprehensiveness can be gauged by the fact that the former runs to nine chapters and the latter to twenty-five. The latter is of threefold importance, in that carbon black is coming into more general use in the manufacture of paints, varnishes, and enamels for several reasons, including tinting strength and purity. Secondly, the book has sections devoted to the preparation of paints, varnishes, and japans; and thirdly, Mr. Langton treats in detail of the use of bituminous varnishes and bituminous baking enamels as insulating materials, and offers technical data for their preparation.

The use of cellulose ester varnishes is a subject that has long deserved a monograph. This volume adequately meets the demand by giving the latest theoretical and technical information, and also contains a critical survey of the literature of the subject. The volumes are illustrated, and are published at 15s. net.

Chemical Education in America

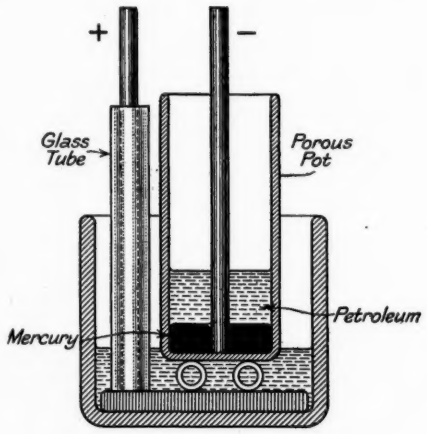
WE have received a catalogue of " Courses in Chemical Engineering " from the University of Michigan, U.S.A., which contains a very comprehensive list covering many branches of the subject. Courses are offered in metallurgy, particularly in that of iron and steel, and there are lectures on fuels and furnaces, as well as in the chemical technology of the inorganic industries. In a recent issue of the *Journal of Chemical Education*, published by the American Chemical Society, the theory and practice of education are discussed, and there is an interesting contribution on the applications of chemistry in the study and practice of medicine.

Subjects are usually regarded in America from the standpoint of their practical application, and not only does the wide range of courses in the university catalogue seem to bear out this fact, but an article in the *Journal of Chemical Education* especially emphasises it. Dealing with the question of synthetic methanol it says : " Although its introduction in the United States will probably mean a great loss of investment in the wood chemical industry, it will serve as an object lesson to other branches of the American chemical industry. Chemical research has too often been looked upon as an expensive luxury, and it has been the policy of many firms during periods of depression to retrench by cutting their research organisations. Synthetic methanol is an example of what may be accomplished through scientific research when appreciated and supported by industrial chemical concerns, and when co-ordinated with commercial development."

Separation of Barium by Electrolysis

MR. ROBERT SAXON, B.Sc. (Vict.), has sent the following note and diagram of an apparatus designed for the separation of barium by electrolysis of aqueous solution.

The electrolyte is a paste made with a mixture of barium hydroxide and nitrate in equal proportions. The anode consists of a rod of Hadfield's chrome steel or Firth's stay-bright steel fixed vertically to a horizontal slab of Meldrum's acid-resisting metal, and is surrounded by a length of glass tubing, to get concentration on the slab by insulating the rod.



The cathode consists of a rod of steel dipping into mercury at the bottom of a porous pot. The electrolyte is put at the bottom of an outer pot on the top of the metal slab anode. To support the porous pot, two short pieces of glass tube are placed across the slab, which keep the two pots at a constant distance apart and assist insulation.

The current used is obtained from the lighting circuit, with four lamps resistance. The resistance of the electrolyte is great, and in four hours the temperature rises from 19° to 88° C. After four hours' running, a liquid amalgam is obtained which gives an abundant shower of gas, which may be collected over the water which disengages it, and identified as hydrogen. As the temperature rises, the electrolyte loses water which must be replaced by fresh water. To prevent sparking round the cathode mercury, resulting in oxidation of the mercury and of the barium, it is covered with petroleum. Though the heat may drive off steam from the cathode, the petroleum is not heated to its ignition point, and does not interfere in any way with the reaction. Eleven hours' running gives an amalgam containing 4·3 per cent. of barium, estimated from the amount of hydrogen liberated by warming it with dilute hydrochloric acid, as compared with that liberated from a known weight of sodium amalgam of predetermined composition.

Chemical Matters in Parliament

Alcohol Production

The Secretary of State for the Colonies (House of Commons, July 7), in reply to Mr. Hannon, said that so far as he was aware, alcohol was not produced within the Empire from any of the products named (prickly pear, coffee pulp, acorns, potatoes, and molasses) except molasses, from which it was produced in certain parts of the Dominions, British Guiana, and Mauritius. All information, together with the results of research on possible new sources and processes, was distributed by the Department of Scientific and Industrial Research in all quarters where it was likely to be of advantage.

Low-Temperature Carbonisation

Mr. Smithers (House of Commons, July 7) asked Colonel Lane-Fox whether he was aware that over 200,000 tons of coal have been treated by this process and products sold in the open market, and did he not think it had now passed out of the experimental stage, and might be put on a commercial basis ?

Mr. Smithers asked that in view of the very desperate state of the country industrially, would the Government do all they possibly could to expedite putting this on a commercial basis.

Colonel Lane-Fox said that every effort would be made.

Vice-Admiral Sir Reginald Hall asked whether any collieries asked for assistance under the Trade Facilities Act in putting up this plant.

Colonel Lane-Fox said that in two cases applications had been made, he believed successfully.

Cheapening Fertilisers

Mr. Foot Mitchell (House of Commons, July 13) asked the Minister of Agriculture whether he was aware that farmers could employ many more hands if lime, marl and fertilisers were more within their means ; and whether he could take any steps to cheapen the production of these articles.

Mr. Wood said that he was aware that it would be to the advantage of agriculture in this country if larger quantities of lime, marl and fertilisers were used, but his Department had no control over the production or prices of those materials. He called Mr. Mitchell's attention to the terms of the Agricultural Credits Act, 1923, under which loans may be made to farmers' societies for the purchase of lime or fertilisers. Also that the index figure for fertilisers was very much lower than that of agricultural produce, and that for the month of June the average price of fertilisers generally was only 14 per cent. above pre-war.

Reopening Scottish Lime Kilns

Sir A. Sinclair (House of Commons, July 14) asked the Secretary for Scotland whether, in view of the fact that the lime kilns at Loch Eribol situated on the property of the Board of Agriculture were the principal source of lime for the counties of Orkney, Caithness and Sutherland, as well as for parts of Ross-shire, and in view of the recommendation of the Scottish conference on agricultural policy that financial assistance should be given by the State for the reopening of lime kilns, he now proposed to reopen the Loch Eribol lime kilns.

Sir J. Gilmour said that the Board of Agriculture was at present considering the best means of making a general survey of the supplies of lime and of existing and disused lime kilns in this country as recommended by the Agricultural Conference, and pending such survey it was proposed to defer consideration of the question of reopening the Loch Eribol lime kilns.

Poison Gas for China

Sir L. Worthington-Evans (House of Commons, July 15), in replying to Mr. Fort Mitchell, said that he had information to the effect that Chinese militarists had introduced German chemists for manufacturing poison gas.

From Week to Week

FIRE DAMAGED the premises of the Manchester Chemical Company's works at Gibbon Street, Manchester, on Friday, July 10.

SIR ROBERT WALEY-COHEN has been appointed a Trustee of the Ramsay Memorial Fellowship Trust, *vice* Sir George Beilby, deceased.

AN EXPLOSION FOLLOWED BY A FIRE damaged the rubber works of F. Walters and Co., Miles Platting, on Monday. The ignition of escaped gases is thought to have been the cause.

MR. T. J. ROBINSON, of Elisabethville, Belgian Congo, is in London, and is interested in the import of paints and oils. He may be communicated with, care of Clark, Brangwen and Co., 21, Chiswell Street, London, E.C.

THREE EMPLOYEES of Courtaulds, Ltd., rayon manufacturers, Cornwall, Ontario, a branch of the London and Coventry firm of that name, were killed on Tuesday in an explosion in the company's factory. The deaths were caused by asphyxiation. Mr. Horace Mackenzie, formerly of Coventry, an employee of long service, is among the victims.

SILK AND ARTIFICIAL SILK DUTIES are dealt with in a further Notice (No. 102), supplementing with certain details the information already given in Notice No. 101 (Customs Procedure on Importation). Copies may be obtained by importers and others concerned on application to the Secretaries, Customs House, London, E.C.3, or to any collector of Customs and Excise.

JOHN FOSTER AND SONS, of Preston, engineers, boiler makers, and specialists in chemical machinery, are holding a dinner for employees in the Public Hall, on Saturday, July 25. This event will commemorate the attainment of Colonel Foster's seventieth birthday. The firm constructs important plant for Brunner, Mond and Co., Ltd., The United Alkali Co., and Courtaulds, Ltd.

SEVERAL ASSISTANTS AT A SALARY OF £1,000 per annum, are required by Mr. G. F. Horsley, recently-appointed Director of Research to the Chilean Nitrate Association. A similar, or possibly larger, number of junior assistants will be appointed at a salary of £500. Further information may be obtained from Mr. H. J. Pooley, Bureau of Appointments, Institution of Chemical Engineers, 307, Abbey House, London, S.W.1.

PROFESSOR G. G. HENDERSON, of Glasgow, presided on Friday, July 10, at the dinner held in connection with the Conference of the Institute of Chemistry at York. Mr. G. S. Crossley, production manager of Rowntree and Co., proposed The Institute, and observed that the chemist was essential in industry. The President said that the Institute numbered nearly 5,000 people engaged in what was one of the most important professions in the country and on which the future prosperity of the nation was almost wholly dependent.

AN INQUIRY into the circumstances attending the death of Matthew Dickie, chemical works foreman, of Glasgow, was held at Glasgow on Thursday, July 9. It was stated that Dickie was employed by the Cassel Cyanide Co., and on June 10 molten sodium cyanide was being run from a furnace through a pipe into a metal drum. It was noticed that a small piece of wood had been washed down the pipe with the cyanide and it had got into the drum. Dickie at once stopped the operation. Suddenly there was a burst of flame from the drum, and an explosion which forced out some of the cyanide. Dickie was burned by the molten chemical, and died some time later. The jury found that death was due to burns, shock, and cyanide poisoning.

THE STATUTORY FIRST MEETING of the creditors of Clement Arthur Pavia Langham, Holborn Viaduct House, London, E.C., was held at Bankruptcy Buildings, Carey Street, W.C., on Tuesday. The debtor, after the war, formed a limited company for the purpose of carrying on business as chemical manufacturers, and took up in it 1,500 £1 fully paid up shares, for some of which he paid, while the remainder were placed in his name in return for a formula supplied. The company had a capital of £5,000, of which all but £500 was paid up. He was appointed the managing director of the company. In April, 1921, a West End firm bought the company over, paying share for share to each shareholder, and he was appointed the joint managing director at £1,250 a year, in addition to which he was allotted 200 fully paid shares. In September, 1923, he disagreed with the board of directors, and resigned his post. He then formed another limited company for the purpose of carrying on business as merchants and importers with a nominal capital of £10,000, but it did not prove a success, and a liquidator was appointed. The debtor added that he had at the bank an overdraft which was covered by shares, and asserted that before their market value fell the bank failed to realise, with the result that they were now the petitioners in the present proceedings. He attributed his position to the depreciation of the securities held by the bank, and to his having voluntarily resigned from a post worth £1,500 a year. He roughly estimates his liabilities at £1,000, and there appeared to be no assets. The meeting was closed, and the case remained in the hands of the Official Receiver as trustee for summary administration in bankruptcy.

MR. F. W. BISHOP has been elected a director of the New Paccha and Jazpampa Nitrate Co. in the place of the late Mr. N. G. Burch.

THE WORKS AND WAREHOUSES of Howards and Sons, Ltd., chemical manufacturers, of Ilford, London, will be closed from Saturday, July 25, to Tuesday, August 4.

MR. W. E. LUETCHFORD, director and secretary of Stancourt, Sons and Muir, Ltd., colour manufacturers, of Walbrook, London, has completed 59 years' service with the firm.

SIR JOSIAH STAMP, D.Sc., director of Nobel Industries, Ltd., and British Celanese, Ltd., has been appointed a member of the Government Court of Inquiry into the crisis in the coal industry.

TWO YOUTHS WERE FATALLY SCALDED at Marsland's Bleach Works, Stockport, on Saturday, July 11, through the sudden inrush of steam to a vat in which they were working.

DR. ALTY, Ph.D., of Durham University, who has been invited to a Chair of Physics at Saskatchewan University, was married at Liverpool on Saturday, July 11, to Miss S. W. Harris, M.Sc.

"ACCIDENTAL DEATH" was the verdict at a Preston inquest, on Thursday, July 9, concerning the death of Charles Henry Birtles, analytical chemist, employed at Goodrich Works, Leyland, who received fatal injuries when the fork of his cycle broke.

MR. HENRY ELLISON of Morecambe, Lancs, founder of the firm of Henry Ellison, Ltd., and a director of the Sheffield Chemical Co., Ltd., who died in April, left estate of the gross value of £257,758. with net personalty £216,896. MR. HAROLD NICKOLS, Kirkstall, Leeds, and of 2, Seamore Place, Mayfair, a director of Joseph Turner and Co., left £453,039.

MR. S. F. STELL, F.C.S., for many years chemistry master at Bradford Technical College, retires shortly from the post of chemistry master at Bradford Carlton Secondary School, which post he has held for 25 years. Mr. Stell collaborated with the late Mr. James Spencer and the late Mr. Alfred Barker in producing a number of well-known books on chemical analysis.

SIR RICHARD REDMAYNE, formerly chairman of the Imperial Mineral Resources Bureau, which has now been amalgamated with the Imperial Institute, is to be director of the Imperial Institute for a short period in order that he may supervise the amalgamation of the two bodies. Sir Richard Redmayne has accepted the appointment on the understanding that the term of the appointment does not exceed six months.

DR. F. G. SHEPHEARD, who was formerly with the Mount Lyall Chemical Co., has taken up his duties as chief agricultural chemist for the New Zealand Farmers' Fertiliser Co., Ltd. Dr. Shepheard was well known in England on account of his extensive research work in agricultural and organic chemistry, and in addition to his degree of Doctor of Science, he is also an Associate of the Royal College of Science and a Fellow of the Institute of Chemistry.

APPLICATIONS ARE INVITED for the following appointments:—Professor of Organic Chemistry and a Director of the Chemistry Department at Armstrong College, Newcastle-upon-Tyne.—Registrar, by August 15. Director of the Rubber Research Institute in the Malay States—The Private Secretary (Appointments), Colonial Office, 38, Old Queen Street, Westminster, S.W.1 (August 31). Laboratory assistant for the Mobile Unit, Government Laboratory, Gold Coast—Crown Agents for the Colonies, 4, Millbank, Westminster, S.W.1.

AT BOW STREET POLICE COURT, London, on Wednesday, Mr Graham Campbell gave his decision in a case instituted at the instance of Lysol, Ltd., against the Freesol Co., Ltd., of Hardwidge Street, S.E., for selling a bottle of disinfectant fluid to which the name "Lysol" was applied, and also for supplying such false description. For the prosecution it was stated that ever since "Lysol" was invented by a German and put on the English market in 1892, the genuine article had contained approximately 50 per cent. cresols. Defendants urged that there was no recognised standard for Lysol, and that this was an attempt on the part of the chemists' trade to retain for themselves the sale of the article. The defendants were ordered to pay fines amounting to 30 guineas, with 50 guineas costs.

THE RAMSAY MEMORIAL FELLOWSHIP Trustees have made the following awards of new Fellowships for the session 1925-26 to be held at the Universities indicated:—A British Fellowship of £300 tenable for two years, to Mr. G. A. Elliott (University College, London); A British Fellowship of £300, tenable for one year, to Mr. H. R. Ing (Manchester); a Glasgow Fellowship of £300, tenable for two years, to Mr. T. C. Mitchell (Cambridge); a Glasgow Fellowship, of £300, tenable for one year, to Mr. J. D. Fulton (Manchester); a Canadian Fellowship to Mr. D. McKay Morrison (Cambridge); a Japanese Fellowship of the value of £370, to Dr. Seisi Takagi (University College, London). The Trustees have also renewed the following Fellowships for the same session: Mr. S. W. Saunders (British Fellowship) (University College, London); Mr. Kai J. Pedersen (Danish Fellowship) (Bristol); M. M. Mathieu (French Fellowship) (Davy Faraday Laboratory, Royal Institution, London); Dr. Nicolas Oeconomopoulos (Greek, Fellowship) (University College, London).

References to Current Literature

British

CATALYSIS.—Catalysis at solid surfaces. E. F. Armstrong and T. P. Hilditch. *J.S.C.I.*, June 10, 1925, pp. 701–709.

BURNERS.—The combustion of sulphur-containing materials in hand and mechanical burners. P. Parrish. *J.S.C.I.*; Part I, July 3, 1925, pp. 307–317T; Part II, July 10, 1925, pp. 321–325T.

RUBBER.—The function of rubber "resin" in the vulcanisation of mixings containing accelerator and zinc oxide. G. Martin and W. S. Davey. *J.S.C.I.*, July 3, 1925, pp. 317–320T.

The manufacture of rubber tyres. *Ind. Chem.*, June, 1925, pp. 237–246.

GENERAL.—Explosive vapours and the testing of oil tanks. W. M. Seaber. *Ind. Chem.*, June, 1925, pp. 247–249.

Some aspects of the mineral metabolism of farm animals. W. Godden and A. D. Husband. *J.S.C.I.*, July 3, 1925, pp. 671–674.

The removal of sulphur chloride and similar liquids from carboys. R. Defries. *J.S.C.I.*, July 3, 1925, pp. 675–676.

BORATES.—Lead borates. E. C. Brown and J. R. Partington. *J.S.C.I.*, July 10, 1925, pp. 325–326T.

ALCOHOLS.—Alcohols of the hydroaromatic and terpene series. Part IV. α- and β-Fenchyl alcohols and some esters derived therefrom. J. Kenyon and H. E. M. Priston. *Chem. Soc. Trans.*, June, 1925, pp. 1472–1487.

SOAP SOLUTIONS.—The constitution of soap solutions in presence of electrolytes. Potassium laurate and potassium chloride. W. C. Quick. *Chem. Soc. Trans.*, June, 1925, pp. 1401–1411.

REACTIONS.—The action of halogens on phenylhydrazones. Part II. The action of chlorine. J. E. Humphries, H. Humble and R. Evans. *Chem. Soc. Trans.*, June, 1925, pp. 1304–1307.

The action of azides on toluquinone. F. D. Chattaway and G. D. Parkes. *Chem. Soc. Trans.*, June, 1925, pp. 1307–1311.

The action of phosphorus pentachloride on 2-isomitroso-1-hydrindones. R. D. Haworth and H. S. Pink. *Chem. Soc. Trans.*, June, 1925, pp. 1368–1371.

SPECTROSCOPY.—A spectroscopic study of the combustion of phosphorus trioxide and of hydrogen phosphide. H. J. Emeléus. *Chem. Soc. Trans.*, June, 1925, pp. 1362–1368.

Spectroscopy and its relation to chemistry. Part III. H. Dingle. *J.S.C.I.*, July 3, 1925, pp. 674–675.

COMBUSTION.—Gaseous combustion at high pressures. Part V. The explosion of hydrogen-air and carbon monoxide-air mixtures at varying initial pressures up to 175 atmospheres. W. A. Bone, D. M. Newitt and D. T. A. Townend. *Roy. Soc. Proc.*, July, 1925, pp. 393–418.

PALLADIUM.—An investigation of the relationships existing between hydrogen and palladium. B. Lambert and S. F. Gates. *Roy. Soc. Proc.*, July, 1925, pp. 456–482.

MOLYBDENUM COMPOUNDS.—Compounds of tervalent molybdenum. Part III. New oxalates. W. Wardlaw and W. H. Parker. *Chem. Soc. Trans.*, June, 1925, pp. 1311–1318.

SOLUBILITIES.—The solubility of sulphur dioxide in water and in aqueous solutions of potassium chloride and sodium sulphate. J. C. Hudson. *Chem. Soc. Trans.*, June, 1925, pp. 1332–1347.

United States

NATURAL DYES.—Attempts to synthesize myricetin. H. F. Dean and M. Nierenstein. *J. Amer. Chem. Soc.*, June, 1925, pp. 1676–1684.

ADSORPTION.—Adsorption of dyes by soils. J. A. Wilkinson and W. Hoff. *J Phys. Chem.*, July, 1925, pp. 808–815.

ASPHALT.—Some observations on the colloidal character of asphalts. R. E. Kirk and L. H. Reyerson. *J. Phys. Chem.*, July, 1925, pp. 865–871.

PHOTO-CHEMISTRY.—Mechanism of the photo-chemical reaction between hydrogen and chlorine. A. L. Marshall. *J. Phys. Chem.*, July, 1925, pp. 842–852.

OXIDATION.—Induced oxidation of carbohydrates. C. C. Palit and N. R. Dhar. *J. Phys. Chem.*, July, 1925, pp. 799–807.

LEATHER.—On the bacteriology of calf-skin soaking. G. D. McLaughlin and G. E. Rockwell. *J. Amer. Leather Chem. Assoc.*, July, 1925, pp. 312–333.

Report on the determination of moisture in leather. F. P. Veitch and T. D. Jarrell. *J. Amer. Leather Chem. Assoc.*, July, 1925, pp. 334–341.

French

HYDROGENATION.—Catalytic hydrogenation of nitriles under reduced pressure. Synthesis of aldimines. V. Grignard and R. Escourrou. *Compt. rend.*, June 22, 1925, pp. 1883–1887.

KETONES.—Phenylbenzylglyoxal. C. Dufraisse and H. Moureu. *Compt. rend.*, June 22, 1925, pp. 1946–1949.

PHENOLS.—The association of polyphenols. E. Rouyer. *Compt. rend.*, June 22, 1925, pp. 1934–1936.

DYESTUFFS.—Naphthazarin. G. Charrier and G. Tocco. *Rev. gén. des Matières Colorantes*, June, 1925, pp. 166–167.

COMPLEX COMPOUNDS.—Spectrographic study of the formation of complex mercury compounds. P. Job. *Compt. rend.*, June 22, 1925, pp. 1932–1934.

ELECTRO-CHEMISTRY.—The solution of nickel in sulphuric acid under the influence of alternating current. A. P. Rollet. *Compt. rend.*, June 29, 1925, pp. 2047–2049.

ANALYSIS.—A simple method for the estimation of potassium. R. Meurice. *Ann. Chim. Analyt.*, June 15, 1925, pp. 161–163.

Separation of zinc from nickel with hydrogen sulphide. A Kling and A. Lassieur. *Ann. Chim. Analyt.*, June 15, 1925, pp. 163–165.

German

AZO COMPOUNDS.—Molecular compounds of cuprous halides with azo bodies. O. Diels and W. Koll. *Annalen*, June 6, 1925, pp. 262–272.

SUGARS.—Pseudo-glucal and dihydro-pseudoglucal. M. Bergmann. *Annalen*, June 6, 1925, pp. 223–242.

CATALYSIS.—Noble metals as hydrogenation and dehydrogenation catalysts. N. D. Zelinsky and M. B. Turowa-Pollak. *Ber.*, July 8, 1925, pp. 1298–1303.

ACIDS.—Investigations of hypochlorous acid and alkali hypochlorites. R. Dietzel and F. Schlemmer. *Z. anorg. u. allg. Chem.*, July 3, 1925, pp. 381–393.

HYDROGEN.—Active hydrogen. A. Bach. *Ber.*, July 8, 1925, pp. 1388–1393.

OSMIUM COMPOUNDS.—Compounds of osmium-8-oxide. F. Krauss and D. Wilken. *Z. anorg. u. allg. Chem.*, June 15, 1925, pp. 151–167.

ANALYSIS.—Oxidimetric estimation of tungsten, etc., using lead and bismuth amalgams. K. Someya. *Z. anorg. u. allg. Chem.*, June 15, 1925, pp. 168–180.

New determinations with the micro combustion bomb. Part II. M. Padoa and B. Foresti. *Ber.*, July 8, 1925, pp. 1339–1342.

Miscellaneous

BORON COMPOUNDS.—Some asymmetrical derivatives of boron. J. Böeseken and J. A. Mijs. *Rec. Trav. Chim. Pays-Bas*, June 15, 1925, pp. 758–762.

OXIDATION.—Oxidation by means of ozone. Part III. Obtention of methyl-vanillin, heliotropin and anisaldehyde. E. Briner, H. v. Tscharner and H. Paillard. *Helv. Chim. Acta*, July 1, 1925, pp. 406–412.

The electrochemical oxidation of iodobenzene and of *o*- and *p*-iodotoluene. F. Fichter and P. Lotter. *Helv. Chim. Acta*, July 1, 1925, pp. 438–442.

HYDROGENATION.—Catalytic hydrogenation of cyano compounds. H. Rupe and F. Gisiger. *Helv. Chim. Acta*, July 1, 1925, pp. 338–351.

REACTIONS.—The course of the reaction of ammonia on ethyl cinnamate. K. Stosius and E. Philippi. *Monats. für Chem.*, May 27, 1925, pp. 569–572.

STRUCTURE.—The configuration of natural *l*-leucine. P. Karrer, W. Jäggi and T. Takahashi. *Helv. Chim. Acta*, July 1, 1925, pp. 360–364.

The configuration of nicotine. Optically-active hygrinic acid. P. Karrer and R. Widmer. *Helv. Chim. Acta*, July 1, 1925, pp. 364–368.

Patent Literature

Abstracts of Complete Specifications

235,247. Dyestuffs or Intermediates of the Anthraquinone Series, Production of. B. Wylam, J. Thomas and Morton Sundour Fabrics, Ltd., Carlisle. Application date, December 12, 1923.

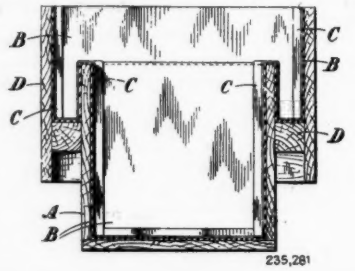
These products are obtained by treating anthraquinone vat dyestuffs with a reducing agent and treating the product with esters of chlorformic acid, such as the ethyl ester or phenyl ester of chlorformic acid and its substituted derivatives or phosgene. In an example, a suspension of flavanthrone in water is mixed with caustic soda and heated with sodium hydrosulphite to 50°–60° C. After the reduction is completed, the mixture is cooled and ethyl ester of chlorformic acid is added very gradually in an atmosphere of coal gas. The mixture is filtered, washed with water, and dried at 100° C. The product is a dark blue paste which is stable in water, but is decomposed by alkalies, regenerating the leuco derivative. If decomposed in the presence of a reducing agent such as sodium sulphide, the regenerated leuco compound remains in solution and will dye cotton without the addition of hydrosulphite. Another example is given using a benzene solution of phosgene in place of the ester of chlorformic acid, and other anthraquinone vat dyestuffs may be employed in the place of flavanthrone.

235,252. Indigoid Vat Dyestuffs Containing Sulphur, Manufacture of. O. Y. Imray, London. From Farbwerke vorm. Meister, Lucius and Brüning, Hoechst-on-Main, Germany. Application date, January 28, 1924.

This process is for the production of sulphur vat dyestuffs of asymmetric constitution, *i.e.*, one half of the dyestuff molecule is not identical with the other half. Red to blue-black dyestuffs are obtained by heating a 2-anil of a mono-(2 : 3-diketodihydro-1-thiophene)-benzene or a substitution product with a mono-(oxythiophene)-naphthalene or a nucleal substitution product. The above mentioned anils are obtained by condensing a corresponding mono-(oxythiophene)-benzene in the presence of alkali with a paranitrosophenol or a paranitrosodialkyl-aniline. Such asymmetric condensation products obtained from a 2 : 3-mono-(oxythiophene)-naphthalene and an α-anil of a mono-(2 : 3-diketodihydrothiophene)-benzene may be treated with halogens, yielding products which are of increased fastness and mostly of violet shade. They are insoluble in dilute acids and alkalies, but soluble in concentrated sulphuric acid and hot nitrobenzene. In an example, 5-chloro-2 : 3-diketo-dihydrothionaphthene 2-(paradimethylamino)-anil is heated with glacial acetic acid and 3-oxy-4 : 5-benzothionaphthene [2 : 1-mono-(oxythiophene)-naphthalene] nearly to boiling point to obtain the dyestuff. Other examples are given in which the anil referred to above is replaced by 4-methyl-5-chloro-7-methoxy-2 : 3-diketodihydrothionaphthene-2-(paradimethylamino)-anil, and in which the 3-oxy-4 : 5-benzo-thionaphthene is replaced by the chloro-substituted oxythio-naphthene obtained by treating the 6-chloro-naphthalene-2-thioglycollic acid with chloro-sulphonic acid; particulars are given of the preparation of 6-chloro-naphthalene-2-thioglycollic acid. Other examples are given of dyestuffs from 4-methyl-6-bromo-2 : 3-diketo-dihydrothionaphthene 2-(paradimethylamino)-anil and 3-oxy-5 : 6-benzo-thionaphthene and also of the chlorination and bromination of several of these condensation products.

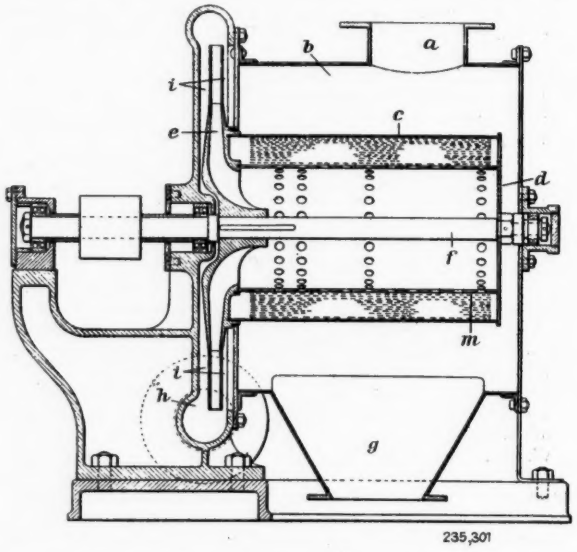
235,281. Lining Containers with Rubber, Process for. F. C. Matthews, The India Rubber, Gutta Percha and Telegraph Works Co., Ltd., 106, Cannon Street, London, E.C.4. Application date, March 8, 1924.

The process is for lining tanks, etc., with rubber without the use of a mould, to render them resistant to acids, etc. The tank is lined with a rubber mixture of such a character that it can be vulcanised by means of a liquid subsequently introduced at the necessary temperature, or, alternatively, heated to the necessary temperature in the tank. The wooden vessel *A* is lined with sheets of the rubber mixture *B*, which are joined at the corners by separate strips *C*, a rubber solution being applied between the lining and the vessel. If it is desired that the rubber lining shall overlap the edge of the vessel, a temporary false top *D* is added, and the lining *B* is continued upwards as shown. The vessel is then filled with water which is raised to boiling point by inserting a steam coil, to vulcanise the rubber mixture. The false top *D* is then removed with its attached lining, leaving the tank completed.



235,301. Extraction of Dust and Solid Particles from Gases. T. W. S. Hutchins, Davenham, near Northwich, Cheshire, and J. Swinburne, 82, Victoria Street, London, S.W.1. Application date, March 11, 1924.

The apparatus is for separating dust from gases, *e.g.*, those obtained in the distillation of carbonaceous materials, or for separating liquids from gases. The gas passes through the



inlet *a* into the chamber *b*, which contains a rotating cylinder *c* having a closed end *d*. The cylinder is made of metal plate $\frac{1}{8}$ in. thick, and perforated with a large number of holes $\frac{1}{16}$ in. in diameter. The shaft *f*, which carries the cylinder, carries also the fan *e* and a drum *m* having perforations which increase in diameter or in number towards the end remote from the fan. It is found that the impact of the perforations in the cylinder *c* on the solid particles returns them to the space *b*, so that they settle into the discharge shoot *g*. The purified gas is discharged through the fan into the pipe *h*, the proportions of the fan being such that a slight pressure exists in the space *i*. By this means, leakage from the chamber *b* into the space *i* through the clearance space is prevented. The speed of the cylinder *c* depends on the velocity of the gas through the perforations; thus in separating calcium carbonate coming from the filters of a plant for causticing sodium carbonate, a gas velocity of 9,000 ft. per hour requires a peripheral velocity of 3,000 ft. per minute, while a gas velocity of 20,000 ft. per hour requires a peripheral speed of the cylinder *c* of 4,230 ft. per minute.

235,334. AZO DYESTUFFS, MANUFACTURE OF. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, and H. H. Hodgson, 136, Paley Road, Bradford. Application date, April 1, 1924.

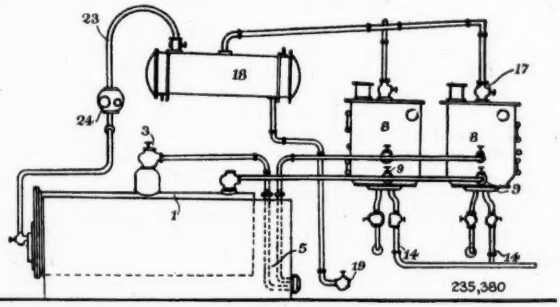
It is known that *o*-*o*¹-dithioaniline can be reduced with sodium sulphide and caustic soda or with zinc and hydrochloric acid, and the reduction product methylated, *e.g.*, with dimethyl-sulphate, to yield a thioanisidine. Similar reactions can be effected with *p*-*p*¹-dithioaniline, trithioaniline, 5 : 5¹-dichlor-2 : 2¹-dithioaniline, 4 : 4¹-dimethyl-2 : 2¹-dithioaniline, 2 : 2¹ dimethyl-4 : 4¹-dithioaniline, and 5 : 5¹-dimethyl-2 : 2¹-dithioaniline, and aminothio-ethers obtained. In this invention, the methyl and ethyl ethers of aminothiophenols are diazotised and coupled with the usual sulphonated intermediates, to obtain mono-azodyestuffs. The aminothio-ethers can be converted into sulpho-acids, and then diazotised and combined. The *o*-thio-ethers are sulphonated directly, while the sulpho acids of the *p*-thio ethers are obtained by the action of sodium disulphide on *p*-nitrochlor-benzene-sulpho-acid, followed by reduction and methylation. Very fast dyestuffs are obtained by combining these sulphonated derivatives with salicylic acid.

235,375. OVENS FOR THE DISTILLATION OF COAL AND OTHER MATERIAL. H. Wade, London. From A. Streppel, 206, Kaiserallee, Berlin. Application date, May 28, 1924.

These ovens for distilling coal or recovering tar from bituminous materials are of the kind having a heating flue with vertical side walls, and vertical rows of louvres through which the hot gases can pass. In this invention, the heating flue is suspended within the oven only at its inlet and outlet, and the top, bottom, end, and side walls of the flue are out of contact with the oven, so that the maximum heating surface is obtained. The heating flue comprises a number of horizontal sections arranged one above the other, through which the heating medium flows in a sinuous path, and the louvres are arranged all round the heating flue and spaced away from it. The surrounding envelope is divided into sections by horizontal partitions extending inwards to the louvres, so that the distillate may be collected fractionally. The uppermost section of the heating flue may be perforated, so that the heating medium passes outward through the material into the gas-collecting space. The upper and lower ends of the heating flue may be tapered so that the material supplied at the top is diverted over the two sides, and the residue at the bottom is directed inwards to the discharge.

235,380. CRUDE DIPENTENE FROM CRUDE RUBBER, MANUFACTURE OF—AND RECOVERY OF LIQUID RUBBER. M. K. Bamber, The Laboratory, Hyde Park Corner, Colombo, Ceylon. Application date, June 5, 1924.

The crude rubber employed is the scrap and waste of the rubber estate. The rubber is disintegrated and heated in a still to about 300° C. under a slight excess of pressure, yielding



dipentene which is condensed at a pressure slightly below atmospheric. The pressure is regulated so that 40-45 per cent. of crude dipentene and 5-10 per cent. of uncondensed gases are obtained. If the heating is stopped when a residue of about 25 per cent. is left, the residue is a liquid rubber of high viscosity, while if a residue of 50 per cent. is left, it is of low viscosity.

A boiler 1 having a regulating valve 3, supplies steam through a superheater 5 where it is heated to 350°-400° C., to a pair of stills 8. Steam traps 9 return the condensed steam from the jackets to the boiler. A regulating valve 17 controls the pressure in the still, and the gases pass to a condenser 18, the crude dipentene being drawn off through a valve 19. The uncondensed gases pass through a pipe 23 to an exhauster 24, and thence to the boiler furnace. The liquid rubber is drawn off through pipes 14. A modified form of still is described which is directly heated in a furnace. The liquid rubber is a substitute for linseed and other drying oils.

235,427-8. WATER GAS, PROCESS AND APPARATUS FOR THE MANUFACTURE OF. T. F. Holden, 218, 8th Street, South-West, Washington, D.C., U.S.A. Application date, September 3, 1924.

235,427. The carburettor of a water-gas plant is provided with an upstanding wall in its upper portion to form a primary mixing chamber into which the oil is sprayed, while the gas entering the carburettor passes first around this mixing chamber. The gas from the generator passes first through an economising chamber at the side, where it is heated before passing into the carburettor.

235,428. The mixture of water gas and oil obtained, as in 235,427, is passed from the primary mixing chamber to a secondary mixing chamber filled with refractory brickwork, and thence to a fixing chamber or superheater. The apparatus has a lower fuel consumption and a higher capacity than others.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 211,488 (H. Freeman and Canada Carbide Co., Ltd.), relating to manufacture of sodium sulphide, see Vol. X. p. 446; 214,242 (Soc. of Chemical Industry in Basle), relating to artificial resins, see Vol. X. p. 653; 215,769 and 219,299 (Farbenfabriken vorm. F. Bayer and Co.), relating to manufacture of azo dyestuffs, see Vol. XI. pp. 71 and 299; 221,229 (Synthetic Ammonia and Nitrates, Ltd.), relating to synthesis of ammonia, see Vol. XI. p. 478; 222,486 (Deutsche Gasgluhlicht Auer Ges.) relating to manufacture of pure zirconium compounds, see Vol. XI. p. 561; 226,819 (F. Jourdan), relating to recovery of potassium or sodium aluminates from leucite and other potassium and sodium silicates, see Vol. XII. p. 210; 229,236 (E. Urbain), relating to treatment of gases, see Vol. XII. p. 414.

International Specifications not yet Accepted

233,669. RECOVERING AMMONIA FROM WASTE LIQUORS. J. P. Bemberg Akt.-Ges., 100, Berlinerstrasse, Rittershausen, Germany. International Convention date, May 6, 1924.

Waste liquor obtained in the manufacture of artificial silk by the cuprammonium process is treated with magnesium chloride and sodium phosphate, or with hydrated magnesium hydrogen phosphate, $MgHPO_4$, $7H_2O$, which gives a precipitate of magnesium ammonium phosphate. The hydrated magnesium hydrogen phosphate can be obtained by heating magnesium ammonium phosphate, dissolving in sulphuric acid, and precipitating with soda, or by treating magnesium ammonium phosphate with sulphuric acid equivalent to the ammonia content. The ammonia is thus recovered as ammonium sulphate.

233,734. PURIFYING ANTHRACENE; CARBAZOLE. Verein für Chemische und Metallurgische Produktion, Aussig, Czecho-Slovakia. International Convention date, May 12, 1924.

Crude anthracene is heated with caustic alkali and an indifferent solvent such as paraffin boiling at 260°-320° C., without distilling off the water formed. The alkali carbazole is separated and converted into carbazole, and the anthracene is crystallised and washed with benzene.

234,039. VISCOSE. F. Kempter, 10, Heinestrasse, Stuttgart, Germany. International Convention date, May 15, 1924.

The cellulose xanthate obtained by the treatment of alkali cellulose with carbon disulphide is kneaded with the dilute lye used as a solvent, so that parts not completely acted on are brought into contact with the remaining carbon disulphide. The excess of carbon disulphide is removed after the dissolution process, by reduction of pressure.

LATEST NOTIFICATIONS.

236,538. Process of producing di-acet-oxy-mercuri-4-nitro-ortho-cresol and the product thereof. Abbot Laboratories. July 2, 1924.

236,563. Process for the manufacture of new ureas of p-oxy-m-aminophenylarsinic acid and aminoacidyl derivatives thereof. Chemische Fabrik auf Actien (vorm. E. Schering). July 2, 1924.

236,577. Method of and means for charging carbon disulphide furnaces. Chemische Fabrik Griesheim-Elektron. July 3, 1924.

Specifications Accepted with Date of Application

210,095. Bismuth compounds, Manufacture of. Farbwerke vorm. Meister, Lucius, and Brüning. Jan. 22, 1923.

213,593. Acetyl cellulose, Process of dyeing. J. R. Geigy Soc. Anon. March 31, 1923.

219,024. Hafnium and zirconium, Process of separating. Naamlooze Vennootschap Philips' Gloeilampenfabrieken. July 13, 1923.

220,321. Rubber and similar materials, and products obtained therefrom, Means for retarding the deterioration of. Naugatuck Chemical Co. August 8, 1923.

226,142. Purification or dehydration of cellulose esters and ethers used alone or in admixture with organic or inorganic substances. J. H. Bregeat. Dec. 15, 1923.

230,841. Gaseous fluids, Apparatus for the electrical precipitation of suspended particles from. Lodge Cottrell, Ltd. March 12, 1924. Addition to 216,789.

235,924. Phosphates and other reducible compounds, Process of working up. H. Mehner. Jan. 1, 1924.

236,002. Bituminous coals, Carbonisation of. J. C. Jolly and R. V. Wheeler. May 1, 1924.

236,037. Acetyl silk, Production of fast greenish-yellow shades on British Dyestuffs Corporation, Ltd., J. Baddiley and J. Hill. June 20, 1924.

236,086. Formaldehyde, Manufacture of. W. Carpmael. (*K. Kaiser.*) October 17, 1924.

236,087.—Colloidal or semi-colloidal substances, precipitates, or sediments, Manufacture of—and the separation and recovery of the solid or liquid components. Spencer Chapman and Messel, Ltd., and J. B. Liebert. October 20, 1924.

Applications for Patents

British Dyestuffs Corporation, Ltd., and Laurie, L. G. Manufacture of dispersing agents or protective colloids. 17,541. July 8.

British Dyestuffs Corporation, Ltd., Fyfe, A. W., Mendoza, M., and Perkin, W. H. Manufacture of anthraquinone derivatives. 17,542. July 8.

British Dyestuffs Corporation, Ltd., Bunbury, H. M., and Perkin, W. H. Manufacture of intermediates of the anthraquinone series. 17,556. July 8.

British Dyestuffs Corporation, Ltd., and Renshaw, A. Manufacture of a therapeutic compound. 17,625. July 9.

Chemische Fabrik Griesheim-Elektron and Wenzl, H. Treatment of fibrous vegetable materials for production of cellulose. 17,449. July 7.

Clark, T. W. F., and Pearson and Co., Ltd., E. T. Method of preserving activity of hydrogen peroxide in the presence of fatty substances. 17,751. July 10.

Crosfield and Sons, Ltd., J. Adsorbing, etc., substances. 17,532. July 8.

Electro Metallurgical Co., and Potts, H. E. Preparation of zirconium alloys. 17,380. July 7.

Hall, A. J., and Silver Springs Bleaching and Dyeing Co., Ltd. Process for dyeing cellulose-acetate products black. 17,684. July 10.

Henderson, J. A. R., and Horsfall, R. S. Manufacture of dispersing agents or protective colloids. 17,541. July 8.

Hoffmann-La Roche and Co. Akt.-Ges., F. Manufacture of compounds of dialkyl or arylalkyl barbituric acids. 17,775. July 10. (Switzerland, July 23, 1924.)

Ketoid Co. Manufacture of cellulose acetate. 17,828. July 11. (United States, July 22, 1924.)

Lewis, J. Extraction of oils and fats. 17,557. July 8.

Lilienfeld, L. Manufacture of artificial materials. 17,607. July 9. (Austria, May 30.)

Lilienfeld, L. Manufacture of cellulose compounds. 17,608. July 9. (Austria, May 30.)

Mathieson Alkali Works. Purification of iron. 17,319. July 6. (United States, April 10.)

Morgan Crucible Co., Ltd. Metallurgical furnaces. 17,649. July 9.

Sharp and Dohme, Inc. Production of alkyl resorcinols. 17,305. July 6. (United States, April 16.)

Sharp and Dohme, Inc. Production of acyl resorcinols. 17,307. July 6. (United States, April 16.)

Wolf, H. Production of low-boiling point hydrocarbons from hydrocarbons having a high boiling point. 17,362. July 6. (Germany, May 22.)

Spanish Dye Developments

Germany's Prospects in the Market

THE development of the Spanish dye industry is discussed in a recent issue of the *Deutsche Bergwerks Zeitung* by Dr. Geiss, of Hamburg, who points out that although the German industry dominated the Spanish market in the pre-war period, the post-war years have witnessed increased competition in that market, where the contesting parties are now not only the Spanish dye makers, but also the German chemical industry and British and American producers.

Until 1925 the various German firms were separately represented in the Spanish market, but it has been possible to reduce the number of representatives in connection with the new amalgamation and organisation carried out by the German dye industry. The agencies of the Baden and Bayer companies in Barcelona have absorbed the others and also represent outside producers of dyes, and in the Spanish textile district of Catalonia there are now only two German agencies. The Union Quimica Comercial represents Bayer, Casella, and others, while the agency trading as the Sociedad Anonima Lluch acts for the Baden Aniline Co., the Griesheim Co. and the Weiler-ter-Meer company. Within this framework the organisation remains the same as formerly, the staff of the previous separate agencies having been taken over.

Prior to the war, Dr. Geiss states, the only Spanish dye-producing firm of any importance was that of Vero Vidal, of Barcelona, which firm experienced considerable German competition, especially as the Spanish Customs tariff of that period afforded no protection for dyes. But as this Spanish firm did not associate itself with the German price convention it prevented excessive prices to Spanish manufacturers. During the time of the war the Spanish manufacturers obtained from the Government the imposition of a duty on aniline dyes amounting to 1.20 gold peseta per kilogramme, and began the production of various new dyes. As the amount of this duty proved to be ineffective against German competition, it was raised to 4 gold pesetas for aniline powder and 2 gold pesetas for paste. The duty is said to be higher than the cost of producing aniline dyes, and this protectionist policy has rendered the country independent of foreign rivals in the case of some dyes. Under these circumstances and for the purpose of strengthening their position the four Spanish dye works two years ago formed the joint company known as the Fabricacion Nacional de Colorantes y Explosivos.

Spain's Prominent Products

In the opinion of Dr. Geiss, the Spanish capabilities in the chemical industry have not achieved very great success as the producers in question occupy themselves solely with the final production and the manufacture of dyes out of various raw materials. They dominate the Spanish market in so far as concerns sulphur black, Orange II, Benzo 4 B, blue II B, chrome black of type F, chrysoidine and Bismarck brown, while aniline oil is also turned out. On the other hand, a market still exists for certain raw materials which are not produced in Spain, such as dinitrichlorbenzol, H acid, paranitranilin and betanaphthol. The German exports of raw materials are small because it is said not to lie in the interest of German industry to compete with the Spanish dye industry in the final products.

The development of prices in the Spanish market is rendered difficult owing to the competition of the English, American, and Swiss dye works, but on the other hand, any monopoly or control of prices is said to be impossible without the inclusion of the German dye syndicate. With the ratification of the German-Spanish Treaty of Commerce the author expresses the opinion that sooner or later German products, while not gaining a position of monopoly, will recover a dominating position in the Spanish market. He believes that a system of syndication between the German and foreign dye makers would be of great advantage at least for the products which at present are not manufactured in Spain, for some final products, and for raw materials. In any case Dr. Geiss states that the German aniline dye industry will be unable to avoid, like the potash industry, having to take into account the changes brought about by the war and assume a position of equality with other competitors where it formerly had a dominating position. In the end arrangements will have to be made, with or without a keen trade contest, for drawing limiting lines in the market conditions, arrangements which alone are invited by the monopolistic position of the German, Swiss, and British dye producers in the matter of certain dyes.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, July 16, 1925.

A FAIR volume of business has been passing during the last week. The transactions, however, are almost entirely for prompt delivery and little favour is shown towards the forward purchases. Stocks have probably never been so small as they are to-day and price changes are few and far between. Except in one or two lines export demand remains featureless.

General Chemicals

ACETONE stocks are very small, price unchanged at £75 per ton.

ACID ACETIC has been decidedly more active. 80% Technical is quoted £38 per ton and £1 extra for the Pure Grade. Glacial quality for export is particularly active.

ACID CITRIC remains a nominal market at 1s. 5d. per lb.

ACID FORMIC has been in better inquiry. £48 to £49 per ton for 85%.

ACID LACTIC has been rather weaker but the price is firm at £43 to £43 10s. per ton for 50% by weight.

ACID OXALIC is very quiet and spot prices are below the maker's limits. Any increase in demand will be quickly reflected in price.

TARTARIC ACID is weak, market having been considerably influenced by the fall in continental exchanges. Price nominally 11½d. per lb.

ALUMINA SULPHATE is uninteresting and unchanged.

ARSENIC is lifeless, nominally £24 10s. per ton, the tendency still in buyers' favour.

BARIUM CHLORIDE has been in fair demand, price is rather easier at £9 5s. to £9 10s. per ton.

CREAM OF TARTAR is in steady demand at £74 to £78 per ton according to quality and quantity.

EPSOM SALTS is unchanged.

FORMALDEHYDE is a slow market but it is difficult to see how the prices can further decline. Quotation to-day is £40 to £41 per ton.

LEAD ACETATE is in good demand at about £44 15s. per ton for White and £43 per ton for Brown.

LIME ACETATE.—The American grey is quoted at £15 10s. but cheaper offers are obtainable from the continent.

METHYL ALCOHOL.—There is no demand, nominal price is £48 per ton c.i.f.

POTASH CAUSTIC is unchanged.

POTASH CHLORATE is still very scarce, being quoted at 4⅜d. to 4⅝d. per lb.

POTASH PERMANGANATE is without special feature, price nominally 7¾d. per lb.

POTASH PRUSSIATE is in fair demand at about 7½d. to 7¾d. per lb.

SODA ACETATE.—Much more business has been passing, price now £18 10s. to £19 per ton.

SODA BICHROMATE.—A normal business is reported, price unchanged.

SODA HYPOSULPHITE is in very slow demand; nominally price is unchanged, but for actual business £9 10s. for commercial could probably be shaded.

SODA PRUSSIATE.—Inquiry is only moderate, price about 4½d. per lb.

SODA NITRITE is in fair demand at £22 15s. to £23 per ton.

SODIUM SULPHIDE is unchanged.

Coal Tar Products

Although there is no great change in prices, or in the general tone of the market for Coal Tar Products, the threatened coal stoppage is having a retarding influence on forward business, sellers being afraid to commit themselves.

BENZOL 90% is very firm at 1s. 9d. per gallon on rails, and has a short supply.

PURE BENZOL is quoted at 1s. 10d. to 1s. 11d. per gallon on rails.

CREOSOTE OIL is unchanged at 5½d. per gallon on rails in the North, while the price in London is quoted at 7d. to 7¼d. per gallon.

CRESYLIC ACID remains in poor demand, and is quoted at 1s. 7d. to 1s. 8d. per gallon on rails in bulk, for the pale quality 97/99%, while the dark quality 95/97% appears to be weaker, and can be bought at about 1s. 4d. per gallon on rails.

SOLVENT NAPHTHA is unchanged at 1s. 3d. to 1s. 4d. per gallon on rails.

HEAVY NAPHTHA is selling at 1s. to 1s. 1d. per gallon on rails.

NAPHTHALENES are weak, the lower grades being worth from £3 to £3 15s. per ton, while the 74/76 quality is quoted at £5 to £5 10s. per ton, and the 76/78 quality at £5 15s. to £6 per ton.

PITCH is dull and prices are nominal.

Latest Oil Prices

LONDON.—LINSEED OIL quiet and about 10s. lower; spot, £42 5s.; July and August, £41 5s.; September-December, £41 10s. RAPE OIL quiet; crude, crushed, spot, £48 10s.; technical refined, £51 10s. COTTON OIL steady; refined, common, edible, £47; Egyptian, crude, £42 10s.; deodorised, £49. TURPENTINE firm and 9d. per cwt. higher; American, spot, 67s. 6d.; August, 67s. 9d.; and September-December, 68s. 6d.

HULL.—LINSEED OIL.—Naked, spot, £41 12s. 6d.; July to September-December, £41 10s. COTTON OIL, naked Bombay crude, £38; Egyptian crude, £42 15s.; edible refined, £45 15s.; deodorised, £47 15s.; technical, £41. PALM KERNEL OIL, crushed naked, 5½ per cent., £43. GROUNDNUT OIL, crushed-extracted, £48; deodorised, £52. SOYA OIL, extracted and crushed, £41 15s.; deodorised, £45 5s. RAPE OIL, extracted, £47 10s. per ton net, cash terms, ex-mill. CASTOR OIL and COD OIL unchanged.

Nitrogen Products Market

Export.—The export demand during the last week has continued, and British producers are disposing of their production at about £11 10s. per ton, f.o.b. single bags. The chief demand comes from the continent, although West Indies, Java and the Canary Islands are in the market. Most of this business has been for prompt shipment and higher prices have been secured for the small sales for forward.

Home.—The home demand continues quiet, and home prices are unchanged.

Nitrate of Soda.—During the last week no nitrate sale for Europe has been reported, but quotations remain unchanged at £11 14s. per ton, f.o.b. chief European ports. The statistical position of the nitrate producers is not so strong as it was a year ago, but the inclusion of a fall clause in the sales made by the directorate has given the buyers confidence, and there is no immediate prospect of a drop in prices. It appears likely, however, that later in the season the competition of the synthetic nitrogen may force the nitrate prices down.

American Market Movements

(From *Drug and Chemical Markets.*)

ARSENIC sells at lowest price in ten years. Other heavy chemicals easy and quiet. Steady movement of soda ash and caustic soda on contracts.

Fine chemicals have maintained their steady tone with trading continuing in small lots at unchanged prices practically throughout the list.

Firm active market continues to be reported in light oil distillates. Demand for intermediates shows a slight improvement on small orders. Strong market continues for vegetable and animal oils with prices fairly well maintained. Fish oils remain quiet but firm.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at retailers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£21 to £23 per ton.
Acid Boric, Commercial.—Crystal, £40 per ton, Powder, £42 per ton.
Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d., according to purity, strength and locality.
Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.
Bleaching Powder.—Spot, £10 10s. d/d; Contract, £10 d/d. 4 ton lots.
Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.
Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carriage paid.
Copper Sulphate.—£25 to £25 10s. per ton.
Methylated Spirit 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
Nickel Sulphate.—£38 per ton d/d.
Nickel Ammonia Sulphate.—£38 per ton d/d.
Potash Caustic.—£30 to £33 per ton.
Potassium Bichromate.—5d. per lb.
Potassium Chlorate.—3⅝d. per lb., ex wharf, London, in cwt. kegs.
Salammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton. Carr. pd.
Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.
Soda Caustic, Solid.—Spot lots delivered, £15 12s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.
Sodium Acetate 97/98%.—£24 per ton.
Sodium Bicarbonate.—£10 10s. per ton, carr. paid.
Sodium Bichromate.—4d. per lb.
Sodium Bisulphite Powder 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
Sodium Chlorate.—3d. per lb.
Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool.
Sodium Nitrite 100% basis.—£27 per ton d/d
Sodium Phosphate, £14 per ton, f.o.r. London, casks free.
Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.
Sodium Sulphide conc. solid. 60/65.—£15 per ton d/d. Contract £14 15s. Carr. pd.
Sodium Sulphide Crystals.—£9 5s. per ton d/d. Contract £9 2s. 6d. Carr. pd.
Sodium Sulphite, Pea Crystals.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carbolic Crystals.—3¾d. to 4¼d. per lb., according to quantity. Very quiet. Crude 60's, no market owing to weakness of crystals.
Acid Cresylic 97/99.—1s. 6d. to 1s. 7d. per gall. Little demand. Pale, 95%, 1s. 5d. to 1s. 6d. per gall. Dark, 1s. 3d. to 1s. 4½d. per gall.
Anthracene Paste 40%.—3d. per unit per cwt.—Nominal price. No business.
Anthracene Oil, Strained.—7d. to 8d. per gall. Unstrained, 6d. to 7d. per gall.
Benzol.—Crude 65's.—8d. to 9d. per gall., ex works in tank wagons. Standard Motor, 1s. 7½d. to 1s. 8½d. per gall., ex works in tank wagons. Pure, 1s. 10d. to 1s. 11d. per gall., ex works in tank wagons. Demand exceeds production.
Toluol.—90%, 1s. 7d. to 1s. 9d. per gall. More inquiry. Pure, 1s. 10d. to 1s. 11d. per gall. Quiet.
Xylol Commercial.—2s. 3d. per gall. Pure, 3s. 3d. per gall.
Creosote.—Cresylic, 20/24%, 8d. per gall. Standard specification, middle oil, heavy, 6d. to 6½d. per gall. Fair business.
Naphtha.—Crude, 8d. to 9d. per gall. Solvent 90/160, 1s. 5d. to 1s. 8d. per gall. Demand good. Solvent 90/190, 1s. to 1s. 4d. per gall. Fair demand.
Naphthalene Crude.—Drained Creosote Salts, £3 to £5 per ton. Market quiet. Whizzed or hot pressed, £6 to £9 per ton.
Naphthalene.—Crystals and Flaked, £10 to £11 per ton, according to districts. Very quiet.
Pitch.—Medium soft, 35s. to 42s. per ton, according to district. Slightly more inquiry.
Pyridine.—90/160, 19s. per gall. Heavy, 11s. 6d. to 12s. per gall. Fair business.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.
Acid H.—3s. 9d. per lb. 100% basis d/d.
Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.
Acid Neville and Winther.—5s. 8d. per lb. 100% basis d/d.
Acid Salicylic, technical.—11d. to 11½d. per lb. Steady demand.
Acid Sulphanilic.—9d. per lb. 100% basis d/d.
Aluminium Chloride, anhydrous.—10d. per lb. d/d.
Aniline Oil.—7½d. per lb. naked at works.
Aniline Salts.—8d. per lb. naked at works.
Antimony Pentachloride.—1s. per lb. d/d.
Benzidine Base.—3s. 8d. per lb. 100% basis d/d.
Benzyl Chloride 95%.—1s. 1d. per lb.
p-Chlorphenol.—4s. 3d. per lb. d/d.
p-Chloraniline.—3s. per lb. 100% basis.
o-Cresol 29/31° C.—3d. per lb. Demand quiet.
m-Cresol 98/100%.—2s. 1d. per lb. Demand moderate.
p-Cresol 32/34° C.—2s. 1d. per lb. Demand moderate.
Dichloraniline.—2s. 3d. per lb.
Dichloraniline S. Acid.—2s. 3d. per lb. 100% basis.
Diethylaniline.—4s. 3d. per lb. d/d., packages extra, returnable.
Dimethylaniline.—2s. 2d. per lb. d/d. Drums extra.
Dinitrobenzene.—9d. per lb. naked at works.
Dinitrochlorbenzol.—£84 10s. per ton d/d.
Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 1s. per lb. naked at works.
Diphenylaniline.—2s. 10d. per lb. d/d.
G. Salt.—2s. 2d. per lb. 100% basis d/d.
a-Naphthol.—2s. 3d. per lb. d/d.
B-Naphthol.—1s. per lb. d/d.
a-Naphthylamine.—1s. 3½d. per lb. d/d.
B-Naphthylamine.—3s. 9d. per lb. d/d.
m-Nitraniline.—4s. 2d. per lb. d/d.
p-Nitraniline.—2s. 2d. per lb. d/d.
Nitrobenzene.—5½d. to 5½d. per lb. naked at works.
o-Nitrochlorbenzol.—2s. 3d. per lb. 100% basis d/d.
Nitronapthalene.—10d. per lb. d/d.
p-Nitrophenol.—1s. 9d. per lb. 100% basis d/d.
p-Nitro-*o*-amido-phenol.—4s. 6d. per lb. 100% basis.
m-Phenylene Diamine.—4s. per lb. d/d.
p-Phenylene Diamine.—9s. 9d. per lb. 100% basis d/d.
R. Salt.—2s. 4d. per lb. 100% basis d/d.
Sodium Naphthionate.—2s. 2d. per lb. 100% basis d/d.
o-Toluidine.—10d. per lb.
p-Toluidine.—2s. 3d. per lb. naked at works.
m-Toluylene Diamine.—4s. per lb. d/d.

Wood Distillation Products

Acetate of Lime.—Brown £9 10s. to £10. Quiet market. Grey £15 per ton. Liquor, 9d. per gall. 32° Tw.
Acetone.—£73 per ton.
Charcoal.—£7 5s. to £8 10s. per ton, according to grade and locality.
Iron Liquor.—1s. 7d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.
Red Liquor.—10d. to 1s. per gall. 14/15° Tw.
Wood Creosote.—2s. 9d. per gall. Unrefined.
Wood Naphtha, Miscible.—4s. 3d. per gall. 60% O.P. Solvent, 4s. 6d. per gall. 40% O.P.
Wood Tar.—£4 per ton.
Brown Sugar of Lead.—£43 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 7½d. to 1s. 5d. per lb., according to quality. Crimson, 1s. 5d. to 1s. 7½d. per lb., according to quality.
Arsenic Sulphide, Yellow.—2s. per lb.
Barytes.—£3 10s. to £6 15s. per ton, according to quality.
Cadmium Sulphide.—4s. 4d. per lb.
Carbon Bisulphide.—£25 to £28 per ton, according to quantity.
Carbon Black.—5½d. per lb., ex wharf.
Carbon Tetrachloride.—£55 to £60 per ton, according to quantity, drums extra.
Chromium Oxide, Green.—1s. 3d. per lb.
Diphenylguanidine, 4s. to 4s. 3d. per lb.
Indiarubber Substitutes, White and Dark.—5½d. to 6½d. per lb.
Lamp Black.—£43 per ton, barrels free.
Lead Hyposulphite.—9d. per lb.
Lithopone, 30%.—£22 10s. per ton.
Mineral Rubber "Rubpron."—£13 12s. 6d. per ton f.o.r. London.
Sulphur.—£9 to £11 per ton, according to quality.
Sulphur Chloride.—4d. per lb., carboys extra.
Sulphur Precip. B.P.—£50 to £55 per ton.

Thiocarbamide.—2s. 6d. to 2s. 9d. per lb.
Thiocarbanilide.—2s. 1d. to 2s. 3d. per lb.
Vermilion, Pale or Deep.—5s. per lb.
Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic 80% B.P.—£40 per ton ex wharf London in glass containers.
Acid, Acetyl Salicylic.—2s. 8d. to 2s. 10d. per lb. British makers meeting foreign competition in quality and price.
Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity.
Acid, Boric B.P.—Crystal £46 per ton, Powder £50 per ton. Carriage paid any station in Great Britain.
Acid, Camphoric.—19s. to 21s. per lb.
Acid, Citric.—1s. 4d. to 1s. 4¾d. per lb.
Acid, Gallic.—2s. 9d. per lb. for pure crystal, in cwt. lots.
Acid, Pyrogallic, Crystals.—5s. 4d. to 5s. 6d. per lb.
Acid, Salicylic.—1s. 3d. to 1s. 8d. per lb., according to quantity. Good demand. Technical.—11d. per lb.
Acid, Tannic B.P.—2s. 9d. per lb.
Acid, Tartaric.—11½d. per lb., less 5%.
Amidol.—9s. per lb., d/d.
Acetanilide.—1s. 7d. per lb. for quantities.
Amidopyrin.—13s. 2d. per lb.
Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.
Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
Atropine Sulphate.—12s. 6d. per oz. for English make.
Barbitone.—11s. 6d. per lb.
Benzonaphthol.—3s. 5d. to 4s. per lb. spot.
Bismuth Carbonate.—12s. 9d. to 14s. 9d. per lb.
Bismuth Citrate.—11s. 4d. to 13s. 4d. per lb.
Bismuth Salicylate.—10s. 2d. to 12s. 2d. per lb.
Bismuth Subnitrate.—10s. 9d. to 12s. 9d. per lb.
(Prices advanced. Supplies of the metal are still restricted.)
according to quantity.
Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.
Bromides.—Potassium, 2s. 1d. to 2s. 3d. per lb.; sodium, 2s. 2d. to 2s. 4d. per lb.; ammonium, 2s. 6d. to 2s. 8d. per lb., all spot. British or Imported. Prices advanced.
Calcium Lactate.—1s. 6½d. to 1s. 8d., according to quantity.
Chloral Hydrate.—3s. 5d. to 3s. 6d. per lb., duty paid.
Chloroform.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.
Creosote Carbonate.—6s. 9d. per lb.
Formaldehyde.—£41 per ton, in barrels ex wharf.
Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
Guaiacol Carbonate.—7s. per lb.
Hexamine.—2s. 5d. per lb. for cwt. lots.
Homatropine Hydrobromide.—30s. per oz.
Hydrastine Hydrochloride.—English make offered at 120s. per oz.
Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.
Hydroquinone.—4s. 1½d. per lb. Nominal.
Hypophosphites.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
Iron Ammonium Citrate B.P.—1s. 9d. to 2s. 1d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 1s. 8d. to 2s. per lb.
Magnesium Carbonate.—Light Commercial, £34 per ton net. Light pure, £46 per ton.
Magnesium Oxide.—Light Commercial, £65 per ton, less 2½%, price reduced; Heavy Commercial, reduced to £24 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
Menthol.—A.B.R. recrystallised B.P., 46s. to 47s. 6d. per lb.; July delivery. Synthetic, 22s. 6d. to 31s. 6d. per lb., according to quality. English make.
Mercurials.—Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 7d. to 3s. 9d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 3s. 10d. to 4s. per lb. Very quiet.
Methyl Salicylate.—1s. 5d. to 1s. 8d. per lb.
Methyl Sulphonal.—18s. to 18s. 6d. per lb.
Metol.—11s. per lb. British make.
Paraformaldehyde.—2s. for B.P. quality.
Paraldehyde.—1s. 3d. to 1s. 4d. per lb., in free bottles and cases.
Phenacetin.—4s. 2d. per lb. in cwt. lots. Slightly cheaper.
Phenazone.—6s. 2d. per lb.
Phenolphthalein.—4s. 1d. per lb. for cwt. lots.
Potassium Bitartrate 99/100% (Cream of Tartar).—72s. per cwt., less 2½% for ton lots.
Potassium Citrate.—1s. 10d. to 2s. 2d. per lb.
Potassium Ferricyanide.—1s. 9d. per lb. Quiet.
Potassium Iodide.—16s. 8d. to 16s. 11d. per lb., according to quantity. Steady market.
Potassium Metabisulphite.—6d. to 7½d. per lb., 1-cwt. kegs included, f.o.r. London.
Potassium Permanganate.—B.P. crystals, 7½d. per lb., spot.
Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
Resorcin.—3s. 10½d. per lb. In fair quantities.
Saccharin.—63s. per lb. in 50 lb. lots.
Salol.—3s. 3d. per lb., for cwt. lots.
Silver Proteinate.—12s. per lb. for satisfactory product light in colour.
Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb.
Sodium Citrate, B.P.C., 1911.—1s. 7d. to 1s. 11d. per lb., according to quantity. U.S.P. 1s. 10d. to 2s. 2d. per lb.
Sodium Hyposulphite, Photographic.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
Sodium Nitroprusside.—16s. per lb.
Sodium Potassium Tartrate (Rochelle Salt).—75s. per cwt., for ton lots and upwards.
Sodium Salicylate.—Powder, 1s. 11d. to 2s. 2d. per lb. Crystal, 2s. to 2s. 2d. per lb. Flake, 2s. 3d. per lb.
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.
Sodium Sulphite, anhydrous, £27 10s. to £28 per ton, according to quantity; 1-cwt. kegs included.
Sulphonal.—12s. 8d. per lb.
Thymol.—15s. per lb.

Perfumery Chemicals

Acetophenone.—9s. per lb.
Aubepine (ex Anethol).—10s. per lb.
Amyl Acetate.—3s. per lb.
Amyl Butyrate.—6s. 6d. per lb.
Amyl Salicylate.—3s. 1½d. per lb.
Anethol (M.P. 21/22° C.).—5s. per lb.
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 6d. per lb.
Benzyl Alcohol free from Chlorine.—2s. 6d. per lb.
Benzaldehyde free from Chlorine.—3s. per lb.
Benzyl Benzoate.—3s. per lb.
Cinnamic Aldehyde Natural.—15s. 6d. per lb.
Coumarin.—14s. 6d. per lb.
Citronellol.—19s. per lb.
Citral.—8s. 6d. per lb.
Ethyl Cinnamate.—9s. per lb.
Ethyl Phthalate.—3s. per lb.
Eugenol.—10s. per lb.
Geraniol (Palmarosa).—28s. 6d. per lb.
Geraniol.—9s. 6d. to 16s. per lb.
Heliotropine.—6s. 3d. per lb.
Iso Eugenol.—14s. 6d. per lb.
Linalol ex Bois de Rose.—20s. per lb.
Linalyl Acetate.—18s. 6d. per lb.
Methyl Anthranilate.—9s. 3d. per lb.
Methyl Benzoate.—5s. per lb.
Musk Ambrette.—50s. per lb.
Musk Ketone.—37s. 6d. per lb.
Musk Xylol.—9s. 6d. per lb.
Nerolin.—4s. 6d. per lb.
Phenyl Ethyl Acetate.—15s. per lb.
Phenyl Ethyl Alcohol.—13s. per lb.
Rhodinol.—37s. 6d. per lb.
Safrol.—1s. 8d. per lb.
Terpineol.—1s. 10d. per lb.
Vanillin.—21s. 6d. to 25s. per lb. Price reduced to meet continental competition.

Essential Oils

Almond Oil, Foreign S.P.A.—13s. 3d. per lb.
Anise Oil.—3s. per lb.
Bergamot Oil.—17s. per lb.
Bourbon Geranium Oil.—18s. per lb.
Camphor Oil.—60s. per cwt.
Cananga Oil, Java.—11s. 3d. per lb.
Cinnamon Oil, Leaf.—5½d. per oz.
Cassia Oil, 80/85%.—9s. 3d. per lb.
Citronella Oil.—Java, 85/90%, 4s. 6d. per lb. Ceylon, 2s. 10d. to 3s. per lb., according to quality.
Clove Oil.—7s. per lb.
Eucalyptus Oil, 70/75%.—2s. per lb.
Lavender Oil.—French 38/40% Esters, 29s. 9d. per lb.
Lemon Oil.—7s. per lb. Advanced again.
Lemongrass Oil.—4s. 9d. per lb.
Orange Oil, Sweet.—10s. 9d. per lb.
Otto of Rose Oil.—Bulgarian, 45s. per oz. Anatolian, 26s. 6d. per oz.
Palma Rosa Oil.—15s. 6d. per lb.
Palma Rose Oil.—15s. 3d. per lb.
Peppermint Oil.—Wayne County. No good quality material available. Japanese, 18s. per lb.
Petitgrain Oil.—8s. 6d. per lb.
Sandal Wood Oil.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, July 17, 1925.

DURING the past week the heavy chemical market has been rather quiet, possibly on account of the near approach of local holidays.

Prices show no material change, with the exception of caustic potash, which is reduced about 15s. per ton.

Industrial Chemicals

ACID ACETIC.—In moderate request and price unchanged. 98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £40 to £42 per ton; 80% technical, £39 to £41 per ton, packed in casks, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flaked, £40 per ton; powdered, £42 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC ICE CRYSTALS.—Practically no demand. Nominally 4¼d. per lb., but could probably be obtained for less.

ACID CITRIC, B.P. CRYSTALS.—In good demand and price unchanged at about 1s. 4¾d. per lb., less 5%, ex store. Offered for early delivery from the continent at 1s. 4½d. per lb., less 5%, ex wharf.

ACID FORMIC, 85%.—Offered for prompt shipment from the continent at about £47 per ton, c.i.f. U.K. ports. Spot material quoted £49 per ton, ex store.

ACID HYDROCHLORIC.—In little demand. Price, 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand quoted £23 15s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Unchanged at 3¾d. per lb., ex store, spot delivery. In moderate demand. Offered for early shipment at about 3½d. per lb, ex wharf.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In moderate demand and price unchanged at about 1s. 1d. per lb., less 5%, ex store. Offered for prompt shipment at 1s. 0½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18% IRON FREE.—Spot lots quoted £6 10s. per ton, ex store. Offered for prompt shipment from the continent at about £6 5s. per ton, c.i.f. U.K. ports.

ALUM, LUMP POTASH.—Spot material quoted £9 7s. 6d. per ton, ex store. Offered for prompt shipment at about £8 5s. per ton, c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—Quoted 1s. 4½d. per lb., ex station, prompt delivery. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton. Packed in 5 cwt. casks, delivered U.K. ports.

AMMONIA LIQUID, 880°.—In steady demand. Unchanged at 2½d. to 3d. per lb. delivered, according to quantities.

AMMONIA MURIATE.—Grey galvaniser's crystals quoted £28 per ton, ex station. Offered from the continent at about £24 per ton, c.i.f. U.K. ports. Fine white crystals quoted £19 10s. per ton, c.i.f. U.K. ports.

ARSENIC.—Refined white Cornish arsenic at about £25 per ton, ex wharf, early delivery. Spot lots quoted £26 per ton, ex store. Foreign arsenic quoted £23 5s. per ton, c.i.f. U.K. ports.

BARIUM CARBONATE, 98/100%.—Offered from the continent at £7 15s. per ton, c.i.f. U.K. ports, prompt shipment.

BARIUM CHLORIDE, 98/100%.—Now quoted £10 per ton, ex store, for English material. Offered from the continent at about £8 5s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Spot lots quoted £10 10s. per ton, ex station. Contracts 20s. per ton less.

BARYTES.—English material unchanged at £5 5s. per ton, ex works, continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £24 10s. per ton, crystals £25 per ton, powdered £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English material unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, carriage paid U.K. stations. Continental on offer at about £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 5s. per ton, ex works, packed in casks free.

COPPER SULPHATE.—Quoted £23 per ton, ex store, spot delivery. English material for export about £24 10s. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Quoted £39 15s. per ton, ex store, spot delivery. Offered for prompt shipment from the continent at about £38 15s. per ton, c.i.f. U.K. ports.

GLAUBER SALTS.—English material unchanged at about £4 per ton, ex store. Continental rather cheaper at about £3 per ton, c.i.f. U.K. ports.

LEAD, RED.—Continental quotations rather higher. Now quoted £40 per ton, c.i.f. U.K. ports. Spot material on offer at about £42 10s. to £43 per ton, ex store.

LEAD, WHITE.—Unchanged at about £43 per ton, ex store, spot delivery.

LEAD ACETATE.—White crystals quoted £44 10s. per ton, spot delivery. Brown quality, £43 per ton, ex store. White crystals on offer from the continent at £43 15s. per ton, c.i.f. U.K. ports. Brown, about £38 per ton, c.i.f. U.K. ports.

LEAD NITRATE.—In moderate demand. Quoted £42 per ton, ex station or f.o.b.

MAGNESITE, GROUND CALCINED.—Usual steady demand, and prices unchanged at about £8 per ton, ex station.

MAGNESIUM CHLORIDE.—Quoted £5 per ton, c.i.f. U.K. ports. Spot material on offer at about the same figure.

POTASH, CAUSTIC, 88/92%.—The Syndicate advise a reduction in price of about 15s. per ton. Now quoted £28 5s. per ton, ex wharf, prompt shipment. Spot material available at about £30 per ton, ex store.

POTASSIUM BICHROMATE.—Price for home consumption, 5d. per lb. delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, c.i.f. U.K. ports. Spot material available at about £26 5s. per ton, ex store.

POTASSIUM CHLORATE.—Still scarce for early delivery. Some available at about 3¾d. per lb., c.i.f. U.K. ports. Spot material quoted 4d. per lb., ex store.

POTASSIUM NITRATE, SALTPETRE.—99% refined granulated quoted at about £24 10s. per ton, c.i.f. U.K. ports. Spot material quoted £27 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—On offer at 7½d. per lb., ex store. Offered for prompt shipment from the continent at about 7¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—In little demand, and price unchanged at about 7d. to 7½d. per lb., ex store.

SODA CAUSTIC.—76/77%, £18 per ton; 70/72%, £16 12s. 6d. per ton. Broken, 60%, £17 2s. 6d. per ton. Powdered, 98/99%, £21 7s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—Spot material quoted £20 5s. per ton, ex store. On offer from the continent at about £17 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM CARBONATE, SODA CRYSTALS.—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more. Alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—English material quoted £9 10s. per ton, ex station. Pea crystals, £14 per ton, ex station. Continental on offer at about £9 5s. per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98%, refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Nominally 4d. per lb., ex store; but in little demand, and could probably be obtained for less.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, f.o.r. works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—English material: Solid, 60/62%, now £13 per ton. Broken, £14 per ton. Flake, £15 per ton. Crystal, £8 10s. per ton, carriage paid U.K. stations, minimum, 4-ton lots, with slight reductions for contracts to the end of the year; 60/62% solid offered from the continent at £10 15s. per ton, c.i.f. U.K. ports. Broken, £1 per ton more; 30/32% crystals, £7 15s. per ton, c.i.f. U.K. ports.

SULPHUR.—Inclined to be higher on account of rumoured Combine in Sicily. Flowers, £9 15s. per ton; roll, £8 15s. per ton; rock, £8 12s. 6d. per ton; ground, £8 15s. per ton, ex store, spot delivery.

ZINC CHLORIDE, 98/100%.—Quoted from the continent at £24 5s. per ton, c.i.f. U.K. ports; 97/98% of English manufacture on offer at £25 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Commercial crystals on offer from the Continent at about £12 per ton, c.i.f. U.K. ports.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

PARANITRANILINE ORTHO SULPHONIC ACID.—Fair home inquiries, 4s. per lb.

PARA NITRO ACETANILIDE.—Small home inquiries, 3s. per lb.

PARANITRANILINE.—Some home inquiries, 2s. per lb.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, July 17, 1925.

Business is quiet on the Manchester chemical market, though probably no quieter than it was last week, or, for that matter, for the last month or two, buying for home consumption and for shipment being maintained at its recent level. Demand for export to the Continent is on a small scale, most of the actual business and of the inquiry now coming through being on account of the Colonial markets. On the whole, values are keeping fairly steady, although minor weaknesses here and there have to be reported.

Heavy Chemicals

Sulphide of sodium is in quiet demand though values are unchanged at £12 15s. to £13 per ton for 60-65 per cent. concentrated solid and £9 5s. for commercial. Hyposulphite of soda is selling in fair quantities at last week's range of £13 15s. to £14 per ton for photographic crystals and round £9 for commercial quality. Bleaching powder is still on offer at £9 10s. per ton, but the demand for this material is relatively small. Saltcake is attracting only a limited amount of attention, and values have an easy tendency though quotably unchanged at £3 12s. 6d. per ton. Glauber salts are a dull section of the market at £3 10s. to £3 12s. 6d. per ton. Caustic soda is very steady at from £15 12s. 6d. per ton for 60 per cent. material to £18 for 76-77 per cent., and the demand is fairly good for both branches of trade. Prussiate of soda is maintained at 4d. per lb. with business on quiet lines. Alkali meets with a moderate amount of inquiry and values are held at round £6 15s. per ton. Bicarbonate of soda is still on offer at £10 10s. per ton, but without attracting very much attention from buyers. Phosphate of soda continues quiet and rather easy at £12 10s. to £12 15s. per ton. Soda crystals meet with a quietly steady demand and values are maintained at £5 5s. per ton. Chlorate of soda is unchanged from last report at 2¾d. to 3d. per lb. but sales are rather slow. Acetate of soda is quiet and easy at round £18 per ton.

Caustic potash and carbonate of potash are slightly lower on the week at £29 and £24 to £24 10s. per ton respectively, but business is not too active. Permanganate of potash is in moderate request with prices steady at 6d. to 6½d. per lb. for commercial and 7½d. for pharmaceutical quality. Bichromate of potash is slow though still on offer at about 5d. per lb. Chlorate of potash is steady and in fair inquiry at 3¾d. per lb. Prussiate of potash is quoted at 7d. per lb. and meets with a quiet sale.

White powdered arsenic, Cornish makes, is quoted in Manchester at £25 to £26 per ton, and no improvement in the demand for this material can be reported. Sulphate of copper is arousing comparatively little buying interest and current values are from £24 to £24 10s. per ton. Nitrate of lead is quiet but fairly steady at £41 per ton. White acetate of lead is quoted at about £44 10s. per ton and brown at about £40, with the demand on a restricted scale. Acetate of lime is quiet and easy at £14 5s. per ton for grey and about £8 per ton for brown. Commercial Epsom salts are fairly steady at £4 5s. to £4 10s. per ton; magnesium sulphate, B.P. quality, is quoted at £6.

Acids and Tar Products

Citric acid is well maintained at 1s. 4½d. to 1s. 4¾d. per lb., and a fair amount of business is being put through. Tartaric acid is in moderate inquiry at 11¾d. to 1s. per lb. Oxalic acid is still a slow seller, and price has an easy tendency at 3¾d. per lb. Acetic acid is rather quiet at £38 per ton for 80 per cent. commercial quality and about £67 for glacial.

Coal tar products are quiet generally. Pitch is about unchanged from the nominal quotation of 40s. per ton, but little actual trade is being done. Creosote oil is steady at round 6d. per lb. Carbolic acid is dull and weak at 4¼d. per lb. for crystals and 1s. 6d. per gal. for crude. Naphthalenes are inactive, current values being about £13 per ton for refined and from £4 for crude according to quality. Solvent naphtha is maintained at 1s. 5½d. per gallon but the demand is slow.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

Abrasives.—A firm of commission agents in Warsaw desires to represent a British firm producing grindstones, carborundum, and other abrasives. (Reference No. 55.)

Vegetable Oils.—A broker in Philadelphia desires to represent British manufacturers or exporters of vegetable oils on a strictly commission basis. (Reference No. 64.)

Linseed Oil.—The Tender Board of the South African Railway Headquarter Offices are calling for tenders to be presented not later than August 31, for the supply of raw and double boiled linseed oil. Further particulars from the D.O.T. (Reference No. BX. 1916.)

Aluminium Paint for South Africa.—The Municipal Council of Johannesburg are calling for tenders to be presented not later than August 22, for the supply of 250 imperial gallons of aluminium paint. Further particulars from the D.O.T. (Reference BX. 1917.)

Aluminium Paint.—The Municipal Council of Johannesburg is calling for tenders to be presented not later than noon on August 22, 1925, for the supply of 250 imperial gallons of aluminium paint. For further particulars quote Reference B.X. 1917.

Value of X-Rays in Industry

The application of X-rays to industry was dealt with in the Physics Section of the International Congress of Radiology in London recently, by Mr. C. Norman Kemp (Edinburgh), who stated that with two colleagues he had been engaged for some time in working out a new technique for the examination of fuels, in which the use of X-rays had proved to be of extreme value. It enabled a rapid preliminary survey to be made from which important results could be deduced with a view to providing information as to the general character of the material, so as to secure improvement in the material placed on the market. In particular, the process of "jigging," whereby minerals were separated from the valueless material with which they were normally associated could be effectively studied by means of X-rays, and thus was yielding important information as to the conditions governing the various stages of the process, and, in particular, exactly when this was complete. No other method, he said, could furnish this information with the same facility and precision. The general application of X-rays in industry had not yet attained that degree of use which its possibilities warranted, but several large firms had adopted it, including the British Thomson-Houston Co., Ltd., the General Electric Co., Ltd., the Metropolitan Vickers Electric Co., Ltd., the Dunlop Rubber Co., Ltd., and the North British Rubber Co., Ltd.

An Emulsified Bitumen for Roads

Yet another road material is described and illustrated in a booklet entitled *The Simplicity Route*, just issued by Colas Products, Ltd., of 38–39, Parliament Street, London, S.W.1.

Standard bitumen emulsions, graded to suit every purpose, are sold under the trade mark "Colas." The bitumen is in a finely divided state, and suspended in water. As soon as the emulsion comes into contact with the air or stone it dries rapidly, leaving a film of bitumen after the evaporation of the emulsifier. Colas can be used under any weather conditions, and is not affected by storage, exposure, or extreme cold. It can be applied to wet roads. It is claimed that Colas will penetrate to a far greater depth than most binding materials, and as each particle of aggregate becomes coated with the requisite thickness of bitumen film to cement each to the other, one of the primary causes of waving or creeping, namely, a superfluity of binder, is eliminated.

Colas contains no material that is injurious to plant or fish life, none of its constituents is soluble in water, and a non-slippery, waterproof surface is claimed for it.

Company News

INDESTRUCTIBLE PAINT, LTD.—An interim dividend of 5 per cent., less tax, will be paid on August 1.

CANADA CEMENT CO.—A quarterly dividend of 1½ per cent., less tax, is announced on the common stock, payable on July 16.

BROKEN HILL SOUTH.—The directors have declared a dividend at the rate of 1s. 6d. and a bonus of 1s., payable on August 15.

AMERICAN SMELTING AND REFINING CO.—On August 1 a quarterly dividend of 1¼ per cent., less tax, is payable on the common stock.

CANADIAN EXPLOSIVES.—A dividend of 1¾ per cent. has been declared for the quarter ended June 30 on the 7 per cent. cumulative preferred shares, payable on July 15.

SHELL TRANSPORT AND TRADING CO., LTD.—The resolutions altering the articles of association passed on June 22 were confirmed at an extraordinary general meeting on Monday.

W. AND H. M. GOULDING.—A dividend of 5 per cent. on the ordinary shares is announced for the year ended June 30, payable in equal portions on July 31 and December 31.

COURTAULDS, LTD.—The directors announce that an interim dividend on the ordinary share capital of 1s. 6d. per share (7½ per cent.), free of tax, will be paid on July 31. The interim distribution a year ago was 1s. 3d. per share.

UNITED WATER SOFTENERS, LTD.—For the year 1924 the net profit was £13,914. Dividends are unchanged at 2s. on the "A" shares and 9s. 9·33d. on the "B" shares; £2,603 is placed to reserve, and £1,543 carried forward.

SQUIRE AND CO.—The net profits for the year 1924 were £23,403, and £5,245 was brought forward. Dividends of 12½ per cent. on the ordinary and 15 per cent. on the deferred ordinary shares are proposed, adding £5,000 to the reserve, and carrying forward £9,674.

MOND NICKEL CO., LTD.—An offer for sale was made on Monday by the British Shareholders Trust, Ltd., of £1,000,000 5½ per cent. mortgage debenture stock and 1,250,000 7 per cent. cumulative "A" preference shares of £1 each of the Mond Nickel Co., Ltd., at the price of £97 per cent. and 22s. 6d. per share, respectively.

PHŒNIX OIL AND TRANSPORT CO.—In their report for the year 1924 the directors state that the profit and loss account shows a profit of £225,610, as compared with £77,861 for the previous year. The directors propose to write £80,710 off preliminary expenses, to create a reserve of £29,000 against sundry assets, and to carry forward the remaining £221,555. An interim dividend for the current year of 1s. per share has been declared.

NEW TRANSVAAL CHEMICAL CO.—The accounts to June 30, 1924, show that the balance to credit of profit and loss, including £13,638 brought forward, is £52,835. The directors have transferred to depreciation account £11,567, leaving £41,268. The following dividends for the year ended June 30, 1924, have been paid: On first preference shares £12,000, and on "A" preference shares £12,000, leaving £17,268. The directors recommend remuneration of London board £630, leaving to be carried forward £16,638. The annual meeting will be held at Winchester House, London, on July 21.

FORSTER'S GLASS CO.—The gross trading profit for the year ended March 31 last is £35,034, which, after providing for debenture, bank interest, and directors' fees, etc., and adding balance from last account, leaves a sum of £26,607. During the year £5,023 was recovered in respect of taxation adjustment, this sum being utilised for the purpose of creating a reserve account, which, with £14,971 transferred from profit and loss, makes £20,000. The directors regret that they cannot recommend any dividend at present, but it is hoped that improvement in the financial position of the company will be continued.

BRITISH CELANESE, LTD.—A trading profit of £408,808 is reported for the year to February 28 last, compared with £101,558 for the previous year. The net profit, without taking into account depreciation on buildings, machinery and plant, is £193,494, compared with a net loss of £74,045 for the previous year. The report states that this result was attained with an increase on capital expenditure account of only £51,004, all of which has been financed out of current resources. It is proposed to transfer the net profit of £193,494 to the credit account, provision for which has not hitherto been possible. The annual meeting will be held at Cannon Street Hotel, London, on July 23, at 12 noon.

Tariff Changes

AUSTRALIA.—Silicate of soda is now subject to an import duty.

NEWFOUNDLAND.—An import tax of 5 per cent. on value on Spanish olive oil is announced.

ROUMANIA.—The following export duties are fixed:—Oil seeds, 30,000 lei per wagon; vegetable oils, 5,000 lei per wagon; oil cakes of all kinds, 2,500 lei per wagon; residues of all kinds of oil-seeds, etc., after the extraction of the oil with benzene, 1,000 lei per wagon; paraffin and stearine candles, 1 lei per kilog; bone fat, 3 lei per kilog; glucose, 0·50 lei per kilog.

All these goods are exempt from commission tax. The duty on these goods is to be collected in a high currency. The basis of calculation is the pound sterling, into which all other currencies allowed in payment are to be converted.

GERMANY.—Under the new Tariff, Premier jus for making soap, with permission and under control, and premier jus which has previously been officially denatured is duty free. Earthnut oil, sesame oil, sunflower-seed oil, pure olive oil, cottonseed oil, castor oil, soya bean oil, and fatty oils not specially mentioned are duty free if for making soap, with permission and under control, or if they have previously been officially denatured.

Dyewood extracts, extracts from other vegetable dyeing materials, are to be subject to a proposed duty per 100 kilogs: liquid, 6 gold marks, solid, 12 gold marks, casein, casein-gum and the like, so far as not included under No. 206, 6 gold marks—present duty, 10 gold marks.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to August 15, 1925.

"PERMANEX."

458,618. For paints, enamels, varnishes, dry colours, distempers, japans, lacquers and anti-corrosive oils. Class 1. Hadfields (Merton), Ltd., Weston Road, Mitcham, Surrey; enamel manufacturers. May 5, 1925.

"ZOSOL."

456,835. For disinfectants. Burgoyne, Burbidges and Co., Ltd., High Street South, East Ham, London, E.6, manufacturing chemist. March 3, 1925. (By consent.)

Gasoline by "Cracking" Processes

THE production of gasoline by "cracking" processes in the United States during the first four months of 1925, amounted to 833,267,765 gallons, or approximately 25 per cent. of the total gasoline output during that period, states the Department of the Interior. Of the remaining 75 per cent. of gasoline production, about 7 per cent. is attributed to natural gas gasoline run to stills or blended at refineries, and 68 per cent. to straight-run gasoline, including what is known in California as "engine distillate."

The operating capacity of the cracking plants in the United States is approximately 700,000 barrels per day of charging stock. Plants with a charging capacity of more than 100,000 barrels daily are now being built, and plants with a charging capacity of 25,000 barrels daily are now shut down. This represents potential equipment sufficient to increase materially the production of cracked gasoline. In addition to the raw material required for these plants, large quantities of gas oil and fuel oil now being burned under boilers are available if needed as a further source of charging stock for the production of gasoline. The report shows that nearly 30 different cracking processes are being used. The proportion of recovery of gasoline achieved ranges from 29 to 34 per cent.

THERE ARE NO RESIDUES

OR

CHEMICAL BY-PRODUCTS

CONTAINING

NON-FERROUS METALS

IN WHICH

PHILIPP & LION

ARE NOT INTERESTED

METALS **CHEMICALS**

2, Broad Street Place,
LONDON, E.C.2

Telephone :—
LONDON WALL 6476 (3 lines).

Telegrams :—
CUFENIAG.

SCRAP

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BRITISH BOILER FLUID AND ENGINEERS STORES CO., LTD., 23, Tanner Street, Tower Bridge Road, analytical manufacturing chemists. (C.C., 18/7/25.) £11 4s. 5d. June 11.

LAWRENCE, Marcus (trading as RELIABLE SANITARY CLEANERS AND DYERS), 12, Dillwyn Street, Swansea, dyer and cleaner. (C.C., 18/7/25.) £13 15s. 1d. May 15.

MASSINGHAM, Joseph, 81, Bartholomew Close, E.C., wholesale chemist. (C.C., 18/7/25.) £21 9s. 8d. June 8.

WHITE BAND MANUFACTURING CO., LTD., 30-26, Pump Pail, Croydon, photo chemical manufacture. (C.C., 18/7/25.) £52 7s. 8d. May 15.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

HAIGH DYEING CO. (1920), LTD. (M., 18/7/25.) Registered July 3, £5,000 charge, to Mrs. A. M. Young, Kilhey Court, Worthington; charged on properties at Haigh, with plant, etc. and £11,000 1st debenture stock in James Burton and Sons, Ltd. (subject to prior charge). *£14,531 12s. 1d. February 26, 1925.

KEELINGS OXIDES (1921), LTD., London, S.W. (M., 18/7/25.) Registered July 3, £500 debentures part of £50,000 and bonus of 6 per cent.; general charge. *£30,000. February 2, 1924.

MORRISONS (DYERS AND CLEANERS), LTD. late YORK HOUSE LAUNDRY, LTD.), Hampton Hill. (M., 18/7/25.) Registered July 1, £1,000 debentures (filed under section 93 (3) of the Companies (Consolidation) Act 1908), present issue £800; general charge. *Nil. March 4, 1925.

Satisfaction

GOLDEN VALLEY OCHRE AND OXIDE CO., LTD., Wick (Glos.). (M.S., 18/7/25.) Satisfaction registered July 1, £2,500, registered February 22, 1916.

London Gazette, &c.

Winding Up Petition

SHARP (J.) AND CO., LTD. (W.U.P., 18/7/25.) A petition for winding up has been presented by Grays Dyes and Colours, Ltd., 112, Albion Street, Leeds, dyeware and alizarine manufacturers, and is to be heard at the County Court, Encombe Place, Salford on July 24.

Companies Winding Up Voluntarily

BITUMEN PRODUCTS, LTD. (C.W.U.V., 18/7/25.) Any creditor of the above company who has not yet intimated his claim in the liquidation is requested to do so before August 8, 1925 (after which date no claims will be admitted) to Geo. F. Todd, C.A., liquidator, 224, St. Vincent Street, Glasgow.

Q-OZONE PROCESSES, LTD. (C.W.U.V., 18/7/25.) By special resolution, June 23, confirmed July 8. J. R. Quain, appointed liquidator. Meeting of creditors at 11 a.m. Thursday, July 23, at 17, Victoria Street, S.W.

TOMLINSON AND CO., (ACTON), LTD. (C.W.U.V., 18/7/25.) W. H. Cork, accountant and auditor, 19, Eastcheap, E.C., appointed liquidator, July 6.

Partnership Dissolved

PATERSON AND BROWN (Alexander PATERSON and William Elliot BROWN), wholesale chemists, Oakfield Chambers, Motherwell, as at June 22, 1925, by mutual consent, by the retiral therefrom of W. E. Brown. The business will be carried on by A. Paterson on his own account, under his own name, and he will uplift all debts due to the firm, and will discharge all the debts and liabilities of the firm.

Receiverships

CALLINGTON ARSENIC CO., LTD. (R., 18/7/25.) J. H. R. Williams, of 15, Prince Albert Street, Brighton, was appointed receiver on July 1, 1925, under powers contained in debenture dated June 25, 1924.

SHARP (J.) AND CO., LTD., manufacturers of aniline colours and chemicals, Victoria Works, Springfield Lane, Salford, Manchester. (R., 18/7/25.) A. Kent Jones, 14, Regent Street, Wrexham, was appointed receiver on behalf of the debenture holder, July 8.

New Companies Registered

ANALYSTS, LTD. Scientific analysts and analytical and consulting chemists, chemical engineers, etc. Nominal capital, £500 in £1 shares. Solicitor: A. Butler, Strand Buildings, Castleford.

JAXO, LTD., 19-21, Hatton Garden, London, E.C.1. Manufacturers of, and dealers in, soap powders, cleansers, detergents, disinfectants, wood preservatives, etc. Nominal capital, £75,002 in 25,000 8 per cent. cumulative preference shares and 50,002 ordinary shares of £1 each.

GEORGE JOHNSON AND SON (SILVERTOWN), LTD. Manufacturers of, and dealers in, organic and other artificial, chemical and industrial fertilisers; oil refiners, manufacturers of, and dealers in, oils and oleaginaceous and saponaceous substances and oil cake makers and rectifiers of, and dealers in, sulphuric acid and sulphate of ammonia, phosphate grinders, etc. Nominal capital, £50,000 in £1 (12,000 "A," 18,000 "B," and 20,000 "C") shares. Solicitors: Linklaters and Paines, 2, Bond Court, London, E.C.4.

NEW DETERGENTS, LTD., Claremont Works, Claremont Road, Wealdstone. Manufacturers of, and dealers in, perfumery; chemists, druggists, analysts and scientists, etc. Nominal capital, £1,000 in £1 shares.

Scarcity of Chemicals in Russia

THE representatives of the chemical trusts met in Moscow recently to discuss the present situation of the market in regard to the principal products. As a result of the deliberations it was ascertained that a great scarcity exists of oil of vitriol, alumina and chrome salts. In the case of the latter it was mentioned that the dearth is so great that in order to satisfy the requirements of the home market the Northern Chemical Trust, which is the only undertaking in Russia which produces these salts, has been compelled to cancel orders received from abroad for the export of such salts.

Owing to the receipt of large applications from the textile and paper industries it has been impossible to avoid a scarcity of chloride of lime. A strained situation has also been created in the market in relation to blue copperas and green copperas, which are almost unobtainable, and in bicarbonate of soda, acetic acid and its salts. On the other hand, the position is more favourable in regard to sodium sulphate, Glauber salts and sulphate, of which a sufficiency exists for coping with the demand.

In the case of lacquers, colours, etc., it was stated that a famine prevails in almost all groups of products. In particular this applies to lead preparations (white, red, and litharge). The particular trust concerned with these products has already sold 50 per cent. of its production for the second half of this year. Quite a serious situation has arisen in the matter of drying oils, of which there are no supplies on the market, while a scarcity also is observed in other products, including oil and spirit varnishes.